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ABSTRACT

This curriculum guide contains materials necessary to implement the vocational English as a Second Language (ESL) program for Farm Equipment Operators developed by the Ceres Unified School District. The first two sections provide the plans and accompanying forms for needs assessment and recruitment/intake/enrollment. In the third section a curriculum development plan is described. It includes a course outline, time line, student progress chart and checklist, and lesson plan form. The next section contains thirty weekly lesson plans, indicating topics, behavioral objectives, outline, vocabulary, materials, student worksheets, evaluation instruments, and lesson evaluations. Vocational topics include identification of tools and farm equipment parts, safety, gasoline engines, and farm equipment operation and maintenance. ESL topics include numbers and vocabulary and identification of tools and equipment and their parts. A midterm and two glossaries are provided. The final section presents a job development plan for furthering students' training opportunities by placing them in on-the-job-training, as well as accompanying forms. (YLB)

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Curriculum Guide for "ESL/Farm Equipment Operator"

A Vocational Approach for Teaching "English-As-A-Second Language"

ED195742

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Special class offers 'tractor language'

GENTLEMEN, START YOUR ENGINES . . . These adult students are learning the mechanics of tractor engines in a special tractor operations class.

SEARCHING FOR THE PROBLEM . . . Bud Cully, instructor (Far Left) overlooks student's work on an engine.

by Sheila Marable, Editor

How can an English class be exciting?

Well, adult education students have found that when you mix classroom lectures of English as a second language and hands-on workshops it could spell sweet success.

One such class of 20 men is being taught tractor maintenance and operation and the English to understand it. The class is being offered for the first time in Stanislaus County. It has been in operation since last October, with students meeting at Ceres High School twice a week.

Ceres High Ag Mechanics Instructor Bud Cully and Cam Davila work hand-in-hand with the men taking the special tractor course.

"They want to learn to better themselves . . . They're like sponges, always interested. It's a challenge to keep up with them . . . I wish it was that way with my day-time high school students," said Cully.

The concept is new. Davila, the English instructor, goes over the names of tools, terms and names of tractor parts and explains them in English. Cully then breaks up the class into smaller groups and gives them a chance to practice what they've learned. They learn how to tune an engine, make mechanical repairs, and how to manuever and handle a tractor.

Although most students are Spanish speaking, there are other languages spoken as well. But, Davila stresses they speak English in his class. "I don't want them to fall back on their native language," he explained.

The unique class is funded through a conglomerate of state programs, such as C.E.T.A., Vocational Education, and Adult Education.

According to Cully, the students are taking the class to give themselves a better chance to find a good farm job. "They want job security," he said.

In the spring, the program's organizers will be looking for farmers interested in providing on-the-job training for the progressing students.

Carolyn Ferguson, a coordinator for the class, wishes to encourage farmers to contact her at 538-0255 for further information on the program.

"We teach by repetition and review," Cully said, watching one student tune an engine while Davila's lecture continues.

Davila is busy reviewing with the class how a distributor works, when suddenly a big bang echos from the workshop nextdoor. "What's happening in there?" he asks the class.

One student quips, "Mechanic no good."

Davila replies, "He will be."

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Introduction

The Ceres Unified School District developed a vocational education approach to English-as-a-Second-Language (ESL) instruction. Alternative strategies for ESL (described within this curriculum guide) were developed by combining ESL techniques with those for teaching the vocation.

The major thrust of the project was to identify skills and to develop curriculum for teaching those skills. These skills included vocational as well as English and math necessary for entering and succeeding in the particular vocation. Industry expertise and existing educational programs were explored for identifying these basic skills.

Following their identification curriculum materials were developed and purchased. Included were: Course outlines, lesson plans (with objectives, student activities and lesson evaluations), instructional and media materials, and evaluation instruments. Additional end products were developed and successfully utilized in the recuitment, intake and job development phases of the project. These end products were designed for use by ESL programs throughout California and the nation.

To help implement this program elsewhere, this guide contains the curriculum materials, lesson evaluations, as well as the plans and accompanying forms for needs assessment, recruitment and job development. These materials are considered appropriate for varying numbers of students. The enrollment of Ceres' vocational/ESL class generally remained between fifteen and twenty adults, most being Spanish-speaking. Ceres' conditions regarding ESL are typical of those in other communities, making replicability relatively easy.

OVER-VIEW OF ALL PROGRAM COMPONENTS

STAFFING/JOB ANNOUNCEMENT:

Recruit applicants with a separately written announcement for each position, stressing these qualifications:

Vocational Teachers: Adult Education credential or equivalent; teaching and/or practical experience in specific vocations, and experience working with LES/NES* adults.

English-as-a-Second Language (ESL) Teachers: Appropriate credential to teach ESL at adult level and working with LES/NES adults, bilingual (English/Spanish) if possible.

Teacher Aides: High school graduate/equivalent, bilingual (English/Spanish) experience working with LES/NES adults, basic vocational-specific skills.

Community Aide/Job Developer: High school graduate, bilingual (English/Spanish) for recruiting applicants, public relations skills, experience working with LES/NES adults and familiarity with community.

NEEDS ASSESSMENT:

To ensure accurate and complete identification of the necessary job-entry skills, in-put should be requested from: (1) local employers from the chosen vocations, (2) representatives from trade organizations and advisory boards, (3) former LES/NES students who have successfully completed similiar training and (4) various manpower agencies (CETA, EDD, etc.).

The methods for securing the information could be by telephone, letter, questionnaire, or preferrably by committee meeting. Regardless of the methos used, these specific vocational skill areas should be identified then taught to the students: vocational-specific equipment or materials; concepts and procedures; vernacular or trade words or terms; instructions to verbalize and/or follow, and visual safety checks or mechanical beakdowns.

CURRICULUM: To be prepared before beginning the program:

Course Outline: The course outline describes the training program within the following categories: title, description, goals or purposes, performance objectives, instructional strategies, times of instruction (number of weeks estimated for each unit of study), evaluation methods, and policy concerning program repeaters.

Roles of ESL vs Vocational Teachers: To clarify the purpose of each, the ESL teacher teaches the vocational-specific and basic English terms and vocabulary, the identification of parts, and the words used within the teaching of a process or procedure. Meanwhile, the vocational teacher teaches the actual procedure and concept, telling what a certain equipment does and how it works. All lessons are given in English, with the home language used only to explain concepts.

*LES/NES: Limited or Non-English-Speaking

Time Line: Covering the training program from week one to week thirty, with two 2-hour classes per week, the time line lists the lesson topics in sequence. It also helps the teacher to plan for their lessons and keep on schedule.

Lesson Plans: Aside from the standard lesson plan components, the V.E.S.L. form asks for behavioral objectives for both the ESL and vocational sections. Also, new vocabulary words are listed for each lesson.

Visual Aids: These handouts reinforce new words and object identification by using illustrations and names. These are handy and inexpensive for the student to learn vocational-specific English at home.

Student Progress Chart: The purpose of this form is to show the progress of each and every student, in light of each performance objective. Students' names are listed on the left side running down the page, while the objectives run across the top.

Student Checklist: The same information, but kept separately for each student, can be designed for student access. With the checklist, objectives are checked off when accomplished. The student can quickly determine how much must still be learned before the end of the training program.

Evaluation Instruments (including Midterm): On-going assessment should be made of each student's English proficiency and vocational skills. Evaluation helps determine whether the student is remedial or advanced, and the level of training needed for the student to benefit the most.

Class Evaluation by Students: Mid-way through the program or sooner, the students express their opinions about the class, itself; (interesting, informative, beneficial or not, in terms of their desired job skills, etc.).

RECRUITMENT:

The Plan: The first step is to write the recruitment plan, to secure trainees. Outreach methods are: media news releases, flyers, telephone contacts and word-by-mouth. All primary foreign languages should be used. Follow-up should be made.

Pre-Assessment: During recruitment and intake, the community aide can assess the student's real need and interest for the specific vocational skills. This will help the teachers plan lessons suited to the specific needs of the students.

Enrollment: The students' enrollment is recorded daily and checked monthly for dropping poor attenders. Students are contacted the same night they are absent to encourage their attendance and determine their plans for continuing the class. Students fill out their own time cards, upon beginning and ending each class.

ON-THE-JOB-TRAINING:

OJT Outreach Plan: Prospective employers are identified when they respond to articles printed in trade/industrial magazines or newsletters; also, to personal contacts, telephone calls and to mailer-brochures. The articles emphasize how the OJT employer's needs may be satisfied.

OJT Wages: The OJT trainee can be made either completely by the employer or by the employer and C.E.T.A. combined. Otherwise, OJT training is volunteer.

OJT Forms: To facilitate job-matching and OJT completion, forms used are the student's job profile card, work agreement (contract), and monitoring reports. Successful completion of training results in the student's permanent employment.

CONCERN	JULY-AUG.	SEPT.	OCT.	NOV JAN.	FEB.	MARCH-APRIL	MAY-JUNE
Staff	Select and meet with staff	Meet with staff monthly to discuss problems/successes	Identify weaknesses; provide inservice	Replace staff as needed →	→		→
Needs Assessment	Select & meet with advisory committee & coop agencies to identify skills necessary for job entry →	→	Maintain contact with committee & agencies for later use (jobs)	Design OJT brochure/mailer → List prospective OJT employers	→		
Curriculum and classroom training	Review available literature →	→	Identify advanced/remedial students	Have students evaluate the classes ←	Give mid-terms to check knowledge and performance	Re-assess students' weak areas; refer to checklist/progress chart.	Adjust curriculu for futur use
	Develop/revise curriculum materials →	→	Adjust curriculum for students' particular needs		Evaluate skills and training needs of advanced students		→
		Begin classes ←	Evaluate & meet with students				→
	Secure facilities and supplies	Monitor for conformance and problems →					→
Recruitment/	Design and use flyers, media releases; recruit in person; log activities	Maintain enrollment records;		Design OJT plan & forms;		Prepare to place remedial students into OJT	→ Remedial students into OJT; seek perm inent job opportuni ties;
Intake/	Pre-asses[illegible] students' needs and abilities; enroll	Contact absent students weekly →		Use media materials to re-			
OJT/ Permanent Employment		Replace students who may drop →		assess local labor market needs & to recruit prospective OJT employers; contact C.E.T.A.	Match advanced students with OJT opportunities with or without C.E.T.A. →		Place adv students into permanent jobs

(VESL) Monthly Staff Meeting

Date: _____ Time: _____ Location: _____

Members Present:

Members Absent:

Agenda: (Presentation/Report/Discussion of Plans/Successes/Failures)

1.) Needs Assessment (Identification of Job Skills):

2.) Curriculum Development:

3.) Recruitment/Intake/Enrollment:

4.) Classroom Training:

ESL

Voc

5.) Job Development (OJT/Permanent):

6.) Other:

NEEDS ASSESSMENT

Preliminary to planning and initiating a program, the most important first step is conducting a needs assessment. Ceres' vocational/ESL program was developed to address recruitment and retention needs faced by traditional ESL classes.

Ceres' staff believed that limited and non-English speaking adults would be more interested in an ESL program designed to meet both their language and occupational needs. This initial need, augmented by specific occupational and language needs resulted in the vocational/ESL programs conducted in Ceres during the 1979-1980 school year.

Occupational and language skills were identified by:

1) staff
2) an advisory committee consisting of
   a) former LES/NES students (now successful employees in the agricultural industry),
   b) industry representatives,
3) EDD

These individuals were contacted by mail (see letter on pages 6-7), phone, and through advisory committee meetings the skills identified via this needs assessment process served as the basis for curriculum development.

NEEDS ASSESSMENT
LETTER

October 5, 1979

As part of the Adult Vocational/Basic Education Program with Ceres Unified School District, two vocational/English classes are being developed. The students will be non-English-speaking (NES) and limited-English-speaking (LES). Our objectives are: 1) to provide these individuals with marketable job skills and, 2) to increase the number of qualified applicants from which employers can choose.

The two vocations are farm equipment operation and maintenance, plus agricultural secretary/bookkeeping. Vocational English will be taught along side each vocational class. Both will be taught in English.

In order that the curriculums directly incorporate the skills most important within these fields, your expertise is being called upon. Mr. Wally Haven, Manager of Growers' Harvesting Committee in Ceres, referred us to you. We would appreciate your input at the Advisory Committee meeting, scheduled on October 9, at 7:30 PM, Room 57, Agriculture Department, Ceres High School (corner of Whitemore and Central). Discussion will be based upon the contents of the following:

1) Which vocation is of greater concern to you? _____.

2) What equipment and/or materials should the employee be familiar with?

(Farm Equipment Op. & Maint.)	///	(Agricultural Secretary)
_____	///	_____
_____	///	_____
_____	///	_____

3) What concepts and procedures should be taught? (Ex: how to shift gears).

_____	///	_____
_____	///	_____
_____	///	_____
_____	///	_____

4) What vernacular or trade words, terms, brand names and other words would you want the employee to identify?

(Farm Equipment Op. & Maint.)	///	(Agricultural Secretary)
_____	///	_____
_____	///	_____
_____	///	_____
_____	///	_____

5) Please list directions which the employee would have occasion to verbalize and/or interpret and follow. (Example: "Drive the tractor out to the field." OR "Sort and distribute the mail.")

"_____ _____	///	"_____
_____."	///	_____."
* * *		* * *
"_____	///	"_____
_____."	///	_____."

6) Please use the remaining space for anything that you feel has been overlooked.

_____	///	_____
_____	///	_____
_____	///	_____
_____	///	_____

7) What visual checks should the employees be able to make to prevent or stop mechanical breakdowns and other problems?

_____	///	_____
_____	///	_____
_____	///	_____

Your attendance at our meeting would definitely add strong support to the eventual design of realistic lessons. Should you not be able to represent your responses and personal comments in person, please mail this completed form to me at the Teachers' Resource Center, Ceres Unified School District, (P.O. Box 307, 6th & Lawrence Streets, Ceres). It would be appreciated if your name could remain on our list as an Advisory Committee member for this project. For further information, my telephone number is (209) 538-0151, 8:30 - 5:30 PM. Thank you for your cooperation.

Carolyn Ferguson

LIST OF IDENTIFIED SKILLS
(Necessary for Job Entry)

ESL/Farm Equipment Operation and Maintenance

Language Skills:

Be able to use vocabulary common with use of tools and parts, and procedures for adjustments, maintenance and operation.
Verbalize, interpret and follow directions. Communicate problems and needs. Speak phrases, such as: "Be careful." "Go faster/slower." "Start/stop the machine." Ask about grower's needs.
Understand phrases, such as: "Please be careful on this piece of machinery."
Read safety signs, operating instructions, deadlines and other messages.
Be familiar with job applications and insurance claim forms.
Be familiar with vernacular or trade words/terms enough to use in speaking; (for example, IBM, W-4 form, ditto, Xerox, John Deere, EDD). Be familiar with common names; (for example: clutch, gear, grease, chains, belts, bolts, nuts, wrenches.
Be familiar with brandnames of oil, engine parts and ag chemical products.

Math Skills:

Do simple addition, subtraction, multiplication and division to measure 1) inches, feet and acres; 2) cups, quarts and gallons; 3) acres/hour, miles per hour.
Figure the number of trees for in-row spacing.
Compute ratios for spray mix.

Vocational Skills:

Recognize work-related problems, mechanical breakdowns.
Do fencing.
Understand function of labor department for protecting employer and employees, specific to farm labor.
Prune, thin, irrigate, cultivate, spray, harvest.
Operate and maintain equipment; concentrate on preventive maintenance and minor repairs.
- Tractor for discing, plowing
- Grape harvester
- Grain harvester
- Sprayer

IDENTIFIED SKILLS
Farm Equipment

Tractor:

Avoid riding the clutch; use the power take-off. Know of "free travel" for clutch adjustment.
Do pre-start checks: oil, fuel, lubrication, belts, tires, etc. Make necessary adjustments for hot or cold weather.
Use gauges and mechanic's hand tools.
Know name and location of parts distributor.
Safety (Precautions and Hazards).

RECRUITMENT/INTAKE/ENROLLMENT PLAN

A successful training program is nurtured by an effective recruitment/intake/enrollment program. This can be accomplished by a capable and motivated staff. With an understanding and commitment toward reaching the identified objectives, their enthusiasm and sense of purpose for the program will help sell what the program has to offer. After a careful assessment of the local labor market's needs, recruitment of students should be fairly easy once people realize the marketable skills they can gain.

During recruitment, if the program is explained clearly and accurately, qualified and/or interested applicants will be attracted. Once a sufficient number of applicants are located, staff will have some choice then in selecting students for meeting their beginning quota.

So vital is the selection of students having the appropriate needs that enrollment and the training itself will be deterred if students feel their needs go unmet. Therefore, in the various recruitment methods, each method should be designed to attract and help screen qualified applicants by presenting a clear picture of the planned training program. Criteria for this selection is explained more in the following recruitment steps.

* * *

RECRUITMENT PROGRAM

-STEPS-

Recruitment Plan:

Before the recruitment process, start the program with staff selection, needs assessment and curriculum development. Then, plan and initiate the recruitment plan following these steps:

1) Objectives: Review the job training objectives (needs assessment) to gain a clearer understanding of desired end product and of the student who can benefit most from the program.

2) LES/NES Population: Identify the locations of the LES/NES population within the community and estimate when they would be most available for attending an evening class.

3) Schedule: Determine the class schedule: starting date, hour, location.

4) Outreach: Agree upon methods for recruiting those populations:

   A) Flyers in English, Spanish and Arabic (With help of EDD recruiter, distribute flyers door-to-door and post in public.)

   B) Radio broadcasts in English, Spanish and Arabic.

   C) Television broadcasts in English, Spanish, and Arabic.

   D) Telephone contacts with parents of LES/NES students, K - 12.

   E) Referral by community service agencies.

   F) Follow up by telephone and in person. As people express interest, record their names, telephone numbers and addresses. The address will help tally the number recruited in each area and identify areas needing more concentrated recruitment and a possible change in recruitment strategy.

5) Assessment: With the idea to attract students who would benefit most from the program, design flyers, public announcements and door-to-door approach to sufficiently give the following information:

   A) Name of class, its description and purpose. (Purpose: For students to gain entry-level job skills and related English or up-grade present skills, resulting in more satisfying and stable employment.)

   B) No registration charge, free.

   C) When, where and how to register, telephone number of our office and contact person.

   D) Starting date, times, frequency and location of class.

   E) Possible on-the-job training, permanent employment and/or credit for attending evening high school program.

5) Assessment (continued):
F) Certificate of Completion, based upon competencies, or Certificate of Recognition for attending.

With potential students responding, the community aide can then assess whether or not the program would suit the needs of the particular individuals. Questions to ask are:

1. What career/vocation interests them most, even if they do not possess the necessary skills?

2. What problems could we help them overcome, otherwise preventing their attendance; (i.e., child care, transportation, etc.)?

3. What are their work experiences relating to the vocation to be taught in our program? Knowing this will help clarify the approximate number and identity of unskilled and semi-skilled people. Students may be "skilled" in their home country but minimuly skilled in the United States, due to different machines.

4. What are their language proficiencies? Are they also limited in their home language. (a reasonable explanation of learning difficulties.)

5. What are names and telephone numbers of others who may be interested in the class?

6) Intake: The results of following up will be people who come to enroll. Prior to enrollment, a conscientious effort is to be directed at assessing the program's suitability to the particular individuals. If these adults need, want and will attend the entry-level training provided over the thirty-week period, enroll them. (If not, refer to appropriate services of other agencies.)

7) Enrollment: Based upon the above, ask the student to fill out the registration form completely preferably in English. Otherwise, provide registration forms in home language to facilitate those students filling them out. Be ready to answer questions pertaining to the subject matter (in general), on-the-job training and possible permanent, unsubsidized employment.

Once class begins, re-assess to clarify students' expectations of program and to refer students (having little need for class) to more appropriate classes or programs. (Some students may be ready for the advanced level, rather than basic.)

Some students may be more suited to advanced-level training, rather than basic. Because of this, some students may drop after attending the first few classes. To maintain a quota of students, recruitment will continue as needed. In the process, as the complexity of the lessons increases, so should the skill level of the incoming students. Otherwise, unskilled student starting the program in its tenth week (for example) would become frustrated by being asked to perform at a level advanced beyond his/her abilities.

Ceres Unified School District

ADMINISTRATION
M. ROBERT ADKISON, Ph.D.
District Superintendent

RECRUITMENT LETTER
(Spanish/English)

JOHN AVILA, Director
Curriculum & Instruction

As part of the Adult Vocational Program with Ceres Unified School District, two vocational/English classes will be conducted at no cost to the students. The primary objective is to provide limited- and non-English-speaking adults with marketable, entry-level job skills, including the English necessary for performing the work. The classes are ESL/Agricultural Secretary/Bookkeeper and ESL/Farm Equipment Operation and Maintenance, scheduled to start on October 22nd and 23rd. To satisfy our planned enrollment and make every one aware of how they may benefit, please publicize the following:

(Spanish Version)

"¿Les gustaria aprender Inglés y un habilidad de trabajo? Clases gratis en: Equipo de Agricultura Operacion y Mantenimiento, o Secretaria de Agricultura. Al mismo tiempo usted aprendera Inglés, que es lo necesario para poder trabajar en un ambiente que es de hable Ingles. Experiencia o diploma de escuela no es necesaria.

Se puede registrar ahora mismo; los dias para registrar son los Lunes, Martes, Jueves y Viernes de las 6:00 - 7:00 de la tarde en la Ceres High School. El numero del cuarto es 29. La Ceres High School esta en la esquina del Avenida Central y la Carretera Whitmore."

(English Version)

"Do you want to learn English and a job skill? Free evening classes will teach you farm equipment operation and maintenance, or agricultural secretary skills. At the same time, you will learn English, necessary for the particular English-speaking environment. No experience or high school diploma is required. Open to limited- and non-English-speaking adults.

Register NOW on Monday, Tuesday, Thursday or Friday nights from 6:00 to 7:00 PM, at Ceres High School, Room 29 on the corner of Central Avenue and Whitmore in Ceres."

It would be appreciated if you could help us recruit for this through the end of October. Thank you very much.

Sincerely,

Carolyn Ferguson
Asst. Project Director

P.O. BOX 307 6th & LAWRENCE STREETS, PHONE 538-0149, CERES, CALIFORNIA 95307

Ceres Unified School District

ADMINISTRATION
ROBERT ADKISON, Ph.D
District Superintendent

JOHN AVILA, Director
Curriculum & Instruction

RECRUITMENT LETTER
(Shorter Version)

TO WHOM IT MAY CONCERN,

In the interest of the community, our Ceres Adult School would greatly appreciate your helping us to inform the agricultural industry of our job training program.

Recognizing that your broad outreach could make the vital link between classroom training and on-the-job training, we ask that you publicize the following information. Please feel free to revise as necessary to accomodate the available space.

> "Through the Adult Education Program of the Ceres Unified School District, students are gaining agricultural skills in two classroom situations: ESL/Farm Equipment Operation/Maintenance and ESL/Agricultural Secretary/Bookkeeper.
>
> On-the-job training will soon adapt these skills to meet the employer's special needs. To complete this two-phase program, your cooperation is needed for helping to provide the on-the-job training sites. For further information, please contact: Ronald Eayrs at (209) 537-4832 or Carolyn Ferguson at (209) 538-0255."

Thank you very much for your help.

Sincerely,

Ron Eayrs, Job Developer

Carolyn Ferguson

Carolyn Ferguson, Asst. Project Director

RE/CF:hb

P.O. BOX 307 6th & LAWRENCE STREETS, PHONE 538-0149, CERES, CALIFORNIA 95307

Ceres Unified School District

ADMINISTRATION
M. ROBERT ADKISON, Ph.D
District Superintendent

JOHN AVILA, Director
Curriculum & Instruction

RECRUITMENT LETTER
(Longer Version)

To Whom It May Concern:

In the interest of the community, our Ceres Adult School would greatly appreciate your helping us to inform the agricultural industry of our job training. We feel it would soon recognize the benefits for them. Realizing that your broad outreach could make the vital link between our students' progress from classroom training to on-the-job training (OJT), we ask that you publicize the following information:

"Through the Ceres Adult Education Program, Spanish and Arabic speakers are learning agricultural skills and related English. The purpose is to provide employers with farm laborers having entry-level skills in either farm equipment operation/maintenance or agricultural secretary/bookkeeping.

These skills were intially identified by an advisory committee, consisting primarily of local farmers, referred to us by the Growers Harvesting committee. English and vocational teachers have since been teaching these basic skills. Once skills are learned the student gains more practice in OJT while enriching it in the classroom at night. OJT is supervised by the staff to ensure employer and trainee satisfaction.

OJT adapts these skills to meet the employer's special needs. For you, the employer, to satisfy YOUR labor needs with near-bilingual students, contact us now: Ronald Eayrs or Carolyn Ferguson at (209) 538-0150/0255. Flexible plans are available concerning wages."

Thank you very much for your services.

Sincerely,

Ronald Eayrs, Job Developer

Carolyn Ferguson, Asst. Director

P.O. BOX 307 6th & LAWRENCE STREETS, PHONE 538-0149, CERES, CALIFORNIA 95307

LEARN ENGLISH

and a job skill...

Free classes open now in:

- ESL + FARM EQUIPMENT OPERATION & MAINTENANCE
- ESL + AGRICUL. SECRETARY/BOOKKEEPER

REGISTER now, 6-7 PM on Monday. Tues., Thurs.-Friday at CERES HIGH SCHOOL - Room 29 (corner of Whitmore & CENTRAL AVE.- CERES

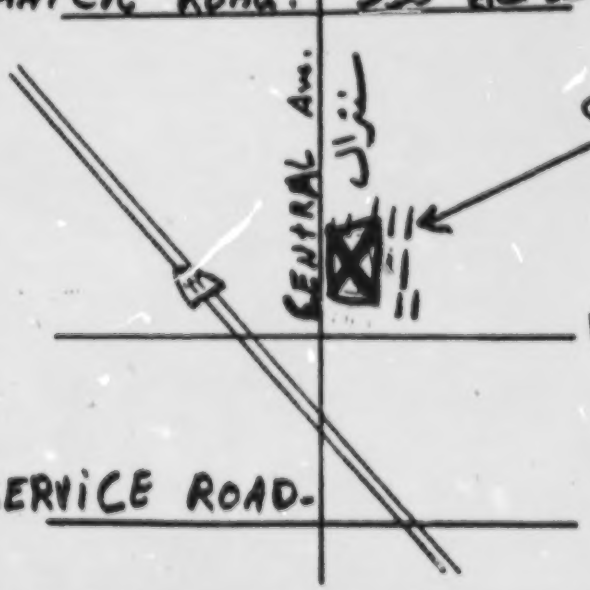
- صفوف مجانية -

(ARABIC VERSION)

" صفوف مجانية في تعليم اللغة الانكليزية والتدريب على العمل "

أ- التدريب العملي التدريجي الواعي باللغة الانكليزية. (الأحداث الزراعية) -
ب- سكرتارية زراعية باللغة الانكليزية.

- ساعات التحصيل: ٦-٧ بعد الظهر خلال أيام الاسبوع - الاثنين إلى الجمعة طوال شهر تشرين الأول الجاري. ماعدا أيام العطل.
في مدرسة ثانوية سيرس غرفة رقم ٩.
٣٢٠ شارع سنترال - مدينة سيرس.



(SPANISH VERSION)

SE PUEDE REGISTRAR AHORA MISMO: EN LOS LUNES, MARTES, JUEVES, VIERNES DE LAS 6:00-7:00 de la tarde en la CERES HIGH SCHOOL CUARTO 29 EN LA ESQUINA DEL AVENIDA CENTRAL Y LA CARRETERA DE WHITMORE. EN CERES... →

APRENDA INGLES Y UN HABILIDAD DE TRABAJO... CLASES GRATIS EN...

MAQUINARIA DE AGRICULTURA OPERACION Y MANTENIMIENTO

SECRETARIA DE AGRICULTURA.

Class _____ ADULT EDUCATION Telephone # _____

REGISTRATION FORM--VESL

Name: _____ Date _____

Last Name First Name

Address: _____

Street City or Town Zip

1.) Are you an adult (Are you not in school or at least 18 years old)? ___/___

yes no

Explain if no: _____

2.) Do you speak English?

___ none ___ some ___ well ___ very well

Do you read English?

___ none ___ some ___ well ___ very well

Do you write in English?

___ none ___ some ___ well ___ very well

3.) Do you already have some kind of skill or experience in the areas of agricultural secretary training or farm equipment operation or mainentance ? Explain: _____

_____

4.) In case of an emergency who could we call (relative, parents etc.)? _____

telephone number

Name: _____ Address _____

(street) (city or town)

Hello and welcome! You have just been registered for one of the following classes of your choice: Farm Equipment Operation and Maintenance or Agricultural Secretary/Bookkeeping. English will also be taught in both of these classes.

Even though you have registered, we cannot guarantee that you will be accepted in the class of your choice. Because the class is government funded, we can only accept a number of students with specific qualifications. We will be calling you to give you more information about the classes and to let you know if you have been accepted in the class of your choice.

ESL
AG/SECRETARY/BOOKKEEPER

DAYS: _____

TIME: _____

PLACE: _____

ESL
FARM EQUIPMENT OPERATION AND MAINTENANCE

DAYS: _____

TIME: _____

PLACE: _____

Clase: _____ ADULT EDUCATION # de telefono _____
REGISTRATION FORM--VESL

Nombre: _____ Fecha _____
(Apellido paterno) (Nombre)

Direccion: _____ _____
(calle) (Pueblo) (zip)

1.) Es usted un adulto (tiene 18 anos por lo menos o menos pero no estudia en escuela)?

____/____ Razon: _____
si no

2.) Usted habla ingles?

____ ____ ____ _____
nada poco bien muy bien

Usted lee ingles?

____ ____ ____ _____
nada poco bien muy bien

Usted escribe ingles?

____ ____ ____ _____
nada poco bien muy bien

3.) Usted ya tiene algunas habilidades de maquinaria de agricultura o de secretaria de agricultura? Explique: _____

4.) En caso de emergencia o accidente, a quien podriamos llamar? ___ ___ _____
(telefono)

Nombre: _____ Direcion: _____
(calle y pueblo)

Hola y bien venido! Usted esta registrado en una de las dos clases: Operacion y Mantenimiento de Maquinaria Agricultura o Secretaria de Agricultura. En cada clase ingles tambien sera ensenado.

Al registrarse, no se le garantiza este curso. Podemos aceptar solamente un numero de estudiantes con las qualificaciones especificas. A usted le llamaremos por telefono para decirles mas informacion de las clases y si usted fue aceptado en la clase que queria.

Operacion y Mantenimiento de Maquinaria de Agricultura/ingles:

LOS DIAS: _____

TIEMPO: _____

LUGAR: _____

Secretaria de Agricultura/ingles:

LOS DIAS: _____

TIEMPO: _____

LUGAR:

OFFICE OF

- ورقة التسجيل -

الاسم والكنية: هاتف المنزل. هاتف العمل.

العنوان الكامل: الشارع. المدينة. رقم المدينة.

اللغات التي تستعملها أكثر .....

مدى معرفتك باللغة الانكليزية شفاها .....

مدى معرفتك باللغة الانكليزية قراءة .....

مدى المامك باللانكليزية كتابة .....

ماهو الصف الذي ترد التسجيل فيه .....

-22-

(السكرتارية الزراعية - او التدريب المهني العملي الزراعي).

هل تمتهن عملا لك فيه خبرة مثبتة تساعدك في هذا الصف؟ -

أذكر شخصا تستطيع الاتصال به في حالة طارئة .... الاسم والكنية ....

..... رقم الهاتف - العنوان الكامل ....

APPLICANT KEEPS

مرحباً بك وبك .

- بالتجهيل في احدى صفوف (التدريب العملي الزراعي المهني) أو (السكرتارية الزراعية / حفظ الدهنيات) اللغة الانكليزية مستعملة في كلا الصفين .
- بامضائكم على ورقة التجهيل تقرون بحضوركم الدروس ليليتين كل اسبوع - كل اسبوع له برنامج بناءً .
- الصفوف مستمرة حتى أواخر ربيع سنة ١٩٨٠م - أيام وساعات الدوام :
- السكرتارية الزراعية - حفظ الدهنيات (الانكليزي) .
الاثنين والثلاثاء - الساعة السابعة حتى التاسعة والنصف مساءً في الغرفة رقم - المعلومة - للياقة وبنزسن ٧ - ٩,٣٠
- التدريب العملي الزراعي المهني يكون . - جيمي اوفرستريت .
يوم الثلاثاء : الساعة السابعة حتى التاسعة والنصف مساءً في الغرفة رقم ٥٧ - المعلومات : بلّة كلي - كام داڤيلا . ٧ - ٩,٣٠

-23-

- رجاء التأكيد من وجود الوقت الكافي لكم لحضور الصفوف باستمرار.
- التأكد من صحة المعلومات في ورقة التسجيل.
- الحصول على معلومات اضافية عليكم مراجعة المسؤولية خلال ساعات الدوام الرسمي.
- اتصل بهم على هاتف بالرقم - ٠٥٣٨ - ١٥٠٠ -

سوف نتصل بكم مؤخراً.

نرجو لكم التوفيق

المسؤولة: كيريليه فيرجيرسن.

" Pre-Assessment of Student "

Name _____
(Last Name) (First Name)

1.) Do you speak some English? ____ Do you speak little or no English? _____
LES NES

What languages do you speak fluently? _____

2.) How many years have you gone to school outside of the United States? _____

3.) How many years have you gone to school in the United States? _____

4.) What would you like to study most in this class? _____

_____

5.) What skills and experience do you already have in these areas?

Diesel tractor operation _____

Gasoline tractor operation _____

Operating a mower _____

Operating a sprayer _____

Making mechanical repairs on the motors of any of the above machines. _

Which ones? _____

6.) What other kind of work experience have you had?_____

_____

7.) What other types of work or skill would you like to learn? _____

_____

8.) What other information could you tell us about yourself that would be help-
for the staff to know? _____

9.) On completing this course, would you like a job related to the things you'll
be learning? _____

10.) Are you an adult (Are you not attending school or at least 18 years old)?

____ / ____
YES / NO

ASESORAMIENTO DEL ESTUDIANTE

Nombre _____
(Apellido Paterno) (Nombre)

1.) Usted habla poco ingles? ___ LES

Usted habla nada o casi nada de ingles? ___ NES

2.) Cuantos años ha estudiado afuera de los Estakos Unidos? _____

3.) Cuantos años ha estudiado en los Estados Unidos? _____

4.) Que es lo que desea estudiar mas en esta clase? _____

_____

5.) Que habilidades o experiencia tiene?

Operacion de tractor de gasolina _____

Operacion de tractor de diesel _____

Operacion de rociador (sprayer) _____

Operacion de maquina segadora, cortadora (mower) _____

Reparacion mecanica de motores o maquinas arriba. En cuales? _____

_____

6.) Otra experiencia de trabajo _____

_____

7.) Que otros trabajos o habilidades desea aprender? _____

_____

8.) Que otras cosas hay de usted que ayudaria al maestro a saber de usted? _

_____

9.) Al terminar estos estudios, le gustaria un trabajo relacionado con lo que haya aprendido? _____

10.) Usted tiene amigos americanos con quienes quede practicar el ingles? ____

11.) Es usted un adulto (Tienes 18 anow por lo menos o menos pero no va a escuela? _____

GRACIAS

RECRUITMENT REPORT

How were LES/NES applicants contacted when they either had no telephone or were never home during work hours? Recruitment and enrollment was deterred because of the long work hours of the farm laborers during the late summer and early fall. The best approach found was to use various methods for contacting them and to make continual attempts until responses were received. A combination of calling, door-to-door canvassing and media helped us reach these unreachables. The registration forms show that the recruitment methods recruiting the applicants were (most-frequent given first):

1) Friends or Relatives - 42%
2) Recruiter (via Flyers/Phone) - 33%
3) Teachers (ESL) - 9%
4) Radio - 9%
5) Agencies - 7%

The next step was intake or receiving those recruited. It seemed that far fewer applicants came to register than those who said they would do so. Perhaps, the idea of learning a vocational skill or upgrading present ones in English rather than their home languages dissuaded some. Others had babysitting or transportation problems or time conflicts. In response to these problems, the period for registering was extended.

During intake/registration, the most difficult step was in determining who to enroll. Encountered were people interested in the program having needs for differing levels of VOC or ESL taining. All wanted training and seemed to know of no other training program designed for teaching vocational skills to LES/NES people.

Some applicants needed training in English primarily and wree unsure about launching into the particular vocation. Most of these applicants were referred to the straight ESL classed (beginning or advanced level). Of these applicants, some were homemakers, not encouraged personally nor by family to develop job skills.

Other applicants had developed the particular vocational skills to marketable levels in their home countries. In moving to the United States, these applicants wanted to gain from our program the abilities to do the same in an English-speaking environment; also, the more industrialized equipment and follow more regulated standards and procedures. With some, they wanted to upgrade themselves from an entry-level job to the better paying job the next level up. These applicants were accepted and enrolled since they needed all of what our program had to offer.

Otherwise, the case was different. Still, other applicants (some second generation in the United States) had good English, but no vocational skills. Enrolling such students in any great numbers would have thrown off the purpose of our program--that of teaching ESL. (The vocational training was planned to facilitate, not overshadow the ESL.)
As a result, these English-speaking minorities lacking vocational skills were enrolled based upon their apparent motivation and the space available, once applicants were enrolled needing and wanting both vocational and vocational ESL training.

In summary, to facilitate recruitment and enrollment, also to maintain attendance, recruitment should be done when farm laborers and others are most available. Once farm activities calm down in the late fall, unemployment and time available would increase. This would require starting and ending the whole program later, based upon agricultural slow down.

CURRICULUM DEVELOPMENT PLAN

Once the needs of the particular labor market and the prospective trainees are identified, the training goals and objectives will be established to satisfy those needs.

In starting curriculum development, rather than "re-inventing the wheel", staff will review existing vocational ESL programs. Doing so will provide a broader perspective of teaching strategies. Essentially, these strategies will treat the ESL and vocational components as having separate, distinct functions, but working hand-in-hand. ESL will concentrate on vocabulary, simple-sentence structure, vernacular and math. The vocational component will stress procedure and will include the subject matter taught in the ESL component.

Having in mind the units of study and their order for being taught, staff will determine additional materials needed. These will be secured when visiting the above programs, from purchasing or designing.

Throughout the process of developing curriculum, the language used in presenting the lessons will be considerate of the trainees' limited- or non-English-speaking ability. Materials affected by this will be the course outline, objectives and student activities (of the lesson plans) handouts and evaluation instruments.

Optimumly, curriculum development will be completed prior to the beginning of classes. However, in response to unexpected and varying needs of students, the lessons may be modified. This can be done weekly, prior to implementing each class, and/or periodically in curriculum development workshops. The need for these modifications and the resulting changes themselves will be discussed during regular monthly VESL* staff meetings.

* "VESL" - Vocational/English-As-A-Second-Language

CERES ADULT SCHOOL

COURSE OUTLINE

I. COURSE TITLE

ESL/Farm Equipment Operation

II. COURSE DESCRIPTION

ESL/Farm Equipment Operation will prepare limited and non-English speakers for jobs as farm equipment operators. Classroom activities will stress the development of language, limited reading, and technical skills necessary to function as a farm equipment operator.

III. GOALS OR PURPOSES

The purpose of this course is to help limited and non-English speaking adults develop the skills necessary to obtain employment as farm equipment operators.

IV. PERFORMANCE OBJECTIVES

A. Seventy-five percent of the students who complete the instruction will demonstrate to the satisfaction of the instructor:

1. an understanding of the required terminology.

2. the ability to read the required charts and instructions.

3. the technical skills necessary to:

a. operate the farm equipment listed below:

1) Utility type farm tractor
2) Moldboard plow
3) Offset disk harrow
4) Spring tooth harrow
5) Spike tooth harrow
6) Hay rake
7) Ridger
8) Spray rig
9) Use of PTO Equipment
10) Cultivator
11) Rear blade

b. perform prestart checks on power equipment.

c. adjust for calibrate related equipment.

d. perform preventive maintenance tasks.

e. trouble-shoot common tractor failures.

B. Seventy-five percent of the students who complete the instruction will be able to discuss in writing or verbally, the job opportunities available to a person with the skills obtained in this class.

V. INSTRUCTIONAL STRATEGIES

Initially, the ESL teacher will provide most of the lessons, which will be with the whole group. In so doing, teacher will role play for illustration purposes; will have students answer questions individually. Once basic English skills are acquired by students, the ESL and vocational teachers will each work with half of the class, then will switch students midway through period. ESL teacher will utilize lecture, role playing, written/oral exercise, object identification, student reporting and other appropriate strategies to stimulate and guide the students. The vocational agriculture teacher will use above strategies, and laboratory (with direct use of equipment and other materials), but on a very individualized basis. An ultimate strategy will be on-the-job training for some students.

VI. TIMES OF INSTRUCTION

Meeting Time: Tuesday and Thursday evenings 7:00 - 9:30 pm
Ceres High School, Ceres, CA

Instructional Unit	Weeks per Unit
A. Basic English terminology and safety	10
B. Operation of Machinery	15
1) Utility type farm tractor	
2) Moldboard plow	
3) Offset disk harrow	
4) Spring tooth harrow	
5) Spike tooth harrow	
6) Hay rake	
7) Ridger	
8) Spray rig	
9) Use of PTO Equipment	
10) Cultivator	
11) Rear blade	
C. Prestart checks on power equipment	1
D. Calibrate related equipment	1
E. Preventive maintenance tasks	2
F. Common tractor failures	1

Total of 30 Weeks = 150 Hours

VII. EVALUATION

The ESL teacher shall evaluate the English capability of each student by administering oral and written tests; accomplished at each meeting, but done with emphasis on a weekly basis. Role playing will be another method used.

For the agriculture component, student activity will be more in the nature of laboratory work.

VIII. REPETITION

Once a student successfully completes this basic entry level course, re-enrollment will not be permitted. An exception will be observed for the student requesting advanced training, should that not deter instructional progress of, or learning by the beginning students.

TIME LINE
ESL/Farm Equipment Operation and Maintenance

MONTH/YR	WEEK	TOPIC
	1-1	Introduction of Individual Students and Course, Introduction of Letter Sounds and Numbers 1-100, Tool Identification
	1-2	Identification & Use of Mechanic Tools
	2	Tractor Parts Identification
	3-1	Identification of Tools, Parts and Their Locations
	3-2	Pre-Start Checks
	4-1	Pre-Starts and Parts Identification
	4-2	Pre-Start Checks
	5	Procedures for Starting, Stopping and Maneuvering
	6	Pre-Start Checks (Review)
	7-1	Identification of Tractor Parts
	7-2	Tractor Part Identification & Safety
	8	Safe Tractor Operation and Review of Week 7
	9	Review of Tractor Parts Identification; Examination and Tractor Operation
	10	Tractor Start and Stop Procedures
	11	I. Review and Quiz on Tractor Parts and Functions. II. Tractor and Implements Backing Exercise with Drawn-Type Implement, Implement Operation.
	12	Carburetor & Ignition System/Distributor
	13	Review of Previous Week (Distributor Parts, Ignition System Schematic & Ignition System Timing.)
	14	Ignition System Timing of "Gasoline Engine"
	15	Ignition System Timing
	16	Ignition Timing (continued); Introduction of Valve Timing and Adjustment

TIME LINE
ESL/Farm Equipment Operation and Maintenance

MONTH/YR	WEEK	
	--	Mid-term and Student Evaluation of Class
	17	Preventative Maintenance
	18	The Importance of Preventative Maintenance
	19	Engine Lubricating Systems
	20 & 21	Preventative Maintenance and Safety
	22	Bearings and Seals--Identification and Maintenance of Engine Lubrication System
	23	Wheel Bearing Packing & Brake Adjusting
	24	Valve Timing & Ignition Timing & Adjustment
	25	Tractor and Implements Backing Exercise with Drawn-Type Implement; Implement Operation
	26-1	Adjustment and Operation of the 3-Point Lift Offset Disk
	26-2	Equipment Operation--Adjustment and Operation of the Moldboard Plow
	27	Equipment Operation--Adjustment and Operation of the Ridger
	28	Equipment Operation--Attachment and Adjustment of 3-Point Implements
	29	Equipment Operation--Adjustment and Operation of the Rear Blade
	30	Spring-Tooth Harrow

ESL/FARM EQUIPMENT OPERATION & MAINTENANCE

STUDENT PROGRESS CHART

SCHOOL YEAR:

STUDENT'S LAST NAME -- FIRST NAME

	RELATED ENGLISH		MATH (BASIC)		SAFETY		HAND TOOL I.D.		TRACTOR PARTS I.D. #I		TRACTOR PARTS I.D. #II		IDENTIFICATION OF TIMING		TRACTOR STARTING		VALVE TIMING & ADJUSTMENT		TRACTOR BACKING		RIDGE BUILD-UP		DITCH HITCH-UP		PLOW-UP		DISKING		SCRAPER USE		SPRING HARROW	
	E	V	E	V	E	V	E	V	E	V	E	V	E	V	E	V	E	V	E	V	E	V	E	V	E	V	E	V	E	V

STUDENT CHECKLIST

ESL/FARM EQUIPMENT OPERATION & MAINTENANCE

STUDENT'S NAME: _____ ENTRY DATE: _____

This is to help monitor the student's progress and to make sure the student accomplishes curriculum objectives. As each objective is met, in the space to the left of each, either specify the date of completion or place a checkmark.

HANDTOOLS:

_____Identify

_____Describe use

_____Use in a sentence involving use, as related to supervisor's instructions.

TRACTOR:

_____Identify parts.

_____Describe purpose.

_____Demonstrate maintenance.

STUDENT SHOULD BE FAMILIAR WITH THE FOLLOWING TO THE DEGREE SPECIFIED BY INSTRUCTOR(S):

TRACTOR OPERATION:

_____Prestart checks

_____Starting and Stopping Procedure

_____Basic Operation and Maneuvering

_____Safety

GASOLINE:

_____Basic Engine Theory

_____Carburetor - Basic Theory of

_____Carburetor - Parts Identification and Function

_____Carburetor - Disassembly, Reassembly, Adjustment and Maintenance

_____Ignition System - Basic Theory

_____Ignition System - Parts Identification and Function

_____Ignition System - Disassembly, Reassembly, Adjustment and Maintenance

DIESEL:

_____Basic Engine Theory

_____Fuel Injection System (FIS)

_____FIS Parts Identification and Function

_____FIS Adjustment and Maintenance

STUDENT'S NAME:_____

COOLING SYSTEM:

_____Theory of Operation

_____Maintenance

ELECTRICAL SYSTEM:

_____Theory of Operation

_____Maintenance

POWER TRAIN:

_____Transmission - Standard

_____Transmission - Hydrostatic

_____Transmission Maintenance

_____Differential Theory of Operation

_____Differential Maintenance

_____Differential Locking System

BRAKES:

_____Parts Identification

_____Adjustment

_____Maintenance

HYDRAULIC SYSTEM:

_____Parts Identification

_____Theory of Operation

_____Maintenance

_____Trouble-shooting

EQUIPMENT (TYPES OF):

_____Disk Harrow

_____Moldboard Plow

_____Spring Tooth Harrow

_____Spike Tooth Harrow

(EQUIPMENT TYPES, continued):

_____Levee Ridger

_____Forage Chopper

_____Mower - Sickle

_____Mower - Rotary

_____Mower - Flail

_____Orchard Sprayer

_____Fertilizer Applicator

EQUIPMENT OPERATION:

_____Attachment

_____Field Operation

_____Adjustment

_____Maintenance

_____Calibration

_____Trouble-shooting

_____General Safety

CF-1/80

V/ESL LESSON PLAN

INSTRUCTOR(S)_____ / _____ DATE_____
(ESL) (VOC)

CLASS_____ WEEK_____

1) LESSON TOPICS:

   A) ESL:

   B) VOCATIONAL:

2) BEHAVIORAL OBJECTIVES:

   A) ESL:

   B) VOCATIONAL:

3) OUTLINE OF LESSON: (TO INCLUDE: SUBJECT MATTER, TEACHING METHODS, STUDENT ACTIVITIES, TIME ALLOTMENTS, AND EVALUATION INSTRUMENTS FOR ESL AND VOCATIONAL COMPONENTS)

   A) ESL:

 Week #_____Class_____

OUTLINE (continued):

B) VOCATIONAL:

4) NEW VOCABULARY:

5) MATERIALS NEEDED:

6) POST EVALUATION OF THIS LESSON:

7) PREPARATION NOW FOR FUTURE LESSONS: (films to order, etc.)

8) OBJECTIVES FOR STUDENTS TO MEET BY END OF MONTH:

CURRICULUM DEVELOPMENT REPORT

In developing the lessons and related materials, the main resources were consulting farmers and visiting existing programs. Other materials were purchased.

1) Programs: No existing vocational/ESL programs specializing in agricultural trades were located. However, two programs were visited and did contribute methods and strategies for teaching LES/NES students:

   A) Chinatown Resource Center focuses on prevocational skills fundamental for employment in general: (social security and job applications, interviewing techniques, and general skills needed for getting to work).

      Contact Person:
      David Hemphill, Project Director
      615 Grant Avenue, 4th Floor
      San Francisco, Calif. 94108

      Telephone: (415) 392-4627

   B) Valley Vocational Center teaches a variety of non-agricultural, yet vocational skills largely to LES/NES Indo-Chinese students. Complementary to to the vocational teachers' lessons are occupational-specific English lessons taught separately by ESL teachers. Students then receive both vocational and vocational ESL training.

      Contact Person:
      Linda Appleton, Facilitator
      Nick Kremer, Curriculum Specialist
      of Indo-Chinese Project
      15381 Proctor
      City of Industry, Calif. 91744

      Telephone: (213) 968-4638

In contrast, our program used more of a team-teaching approach. Both teachers helped reinforce each other, while teaching side-by-side. Once students needed instruction at distinct levels (remedial versus advanced), each teacher taught one of the two groups, then switched after breaktime. Students benefited from each teacher this way and also received more individualized attention due to fewer students in their group.

2) Farmers: It was very helpful to consult with agricultural business people periodically. They helped by informing us of the changing need for employees due to seasonal demands. Also, they suggested topics previously overlooked.

3) Published Materials: Some of the few materials showing potential use for our agricultural/ESL classes were films, cards showing signs (Caution, etc.), and practice sets mostly relating to work in general or to basic English. Publishing companies are listed below for securing a catalog:

A) Developmental Learning Materials (DLM)
7440 Natchez Avenue
Niles, Illinois 60648

B) Fearon Pitman Publishers, Inc.
6 Davis Drive
Belmont, CA. 94002

C) Institute of Modern Languages, Inc.
2622 Pittman Drive; P.O. Box 1087
Silver Spring, Md. 20910

D) Janus Book Publishers
2501 Industrial Parkway W.
Hayward, CA. 94545

E) Lakeshore Curriculum Co.
2695 E. Dominguez St.
P.O. Box 6261
Carson, CA. 90749

F) Regents Publishing Company

G) South-Western Publishing Co.
5101 Madison Road
Cincinnati, Ohio 45227

Published ag-related materials for teaching LES/NES adults were not located. This lead the staff to developing most materials. Of these, pictures were found to be popular with the students. Handouts and flash cards were methods used for showing these pictures, helpful both in class and at home. The important point regarding materials was to use various methods. Since the lessons were taught in English, students unable to understand with one method sometimes grasped much more quickly with another.

When the subject matter became too difficult, students were encouraged to seek out the help of their instructors. When they did not get their questions answered, they became frustrated and started missing class. In our response to this problem, our splitting the more remedial students from the more advanced helped them feel more comfortable and less challenged.

In addition, separating the classes allowed the teachers to direct their lessons and attention to fewer skill levels at any one time. The aide was also a great asset in this situation, interpreting detailed definitions, concepts and procedures for remedial students and helping to monitor their progress. One way for helping the aide record students' progress was with the Student Progress Chart, listing all students and the degree they showed competency for each unit of study.

To reduce the expense of having both a vocational and an ESL teacher, the class conceivably could have been taught by a vocational teacher along with a bilingual aide, vocationally knowledgeable or skilled.

VESL LESSON PLAN **CLASS** ESL/ Farm Equipment Operation and Maintenance **WEEK #** 1 - Day 1

1) LESSON TOPICS:

ESL Introduction of Individual Students & Course, Introduction of Letter Sounds & Numbers 1-100, Tool Identification.

VOC Same

2) BEHAVIORAL OBJECTIVES:

ESL The students will be able to introduce themselves to the teacher and to each other in English. Also, be able to identify the basic tools.

VOC Be able to identify the basic names of materials used in class, and names of 30 mechanic and maintenance tools.

3) LESSON OUTLINE: (TEACHING METHODS, STUDENT ACTIVITIES, EVALUATION INSTRUMENTS)

ESL (Audio-Lingual Method) The staff will introduce themselves and explain purpose of class. Introduce Lesson I of Prevocational English Workbook I (See information given in "materials needed" section.) Have each student introduce him/herself to the teacher(s) and to each other. Have individual and group drills on ways of introducing themselves.

Example: What is your name? Where do you live? Where were you born? When is your birthday? (With appropriate answers). Have each student answer: "My name is_____."
"I was born in_____." (place)
"I am_____years old."
"I live at_____." (address)

Introduce and verbalize terminology of tools. Drill the students individually and as a group for repetition using ESL (audio-lingual) methods. (The teacher will be the model for pronunciation and intonation.) During steps B and C, it will be an appropriate time to roughly assess students' language skills.

The students will identify basic materials listed under materials needed.

Introduce the alphabet. Have students repeat sounds of each letter. Go over numbers to check students' basic math abilities!

Explain how the time cards are to be used for signing into each class, daily. Hand out the Crop Activity Chart; explain relationship between demand for farm labor and the various activities of each season.

(OBJECTIVES, continued) CLASS ESL/ Farm Equipment Operation and Maintenance WEEK # 1 - Day 1

4) NEW VOCABULARY: Mechanics tools listed below:

Screwdriver - Phillips and Standard
Crescent Wrench
Ball Pen Hammer
Open End Wrench
Box End Wrench
Combination Wrench
Socket and Socket Extension
Ratchet
Breaker Bar
Speed Handle
Allen Wrench
T-Bar
Universal Joint
Vise Grips
Pin Punch
Drift Punch
Center Punch
Cold Chisel
Monkey Wrench
Hydraulic Jack
Pliers - Needle Nose, Side Cutting, Channel Lock, Water Pump
Impact Wrench
Feeler Gauge

5) MATERIALS NEEDED: Thirty pieces of tools from the Ceres High School Ag Shop, toolbox, notebooks, binders, pens, pencils, paper, time cards, chalk, chalk board androol sheet, Prevocational English Workbook I, publ. Institute of Modern Languages, Inc. 2622 Pittman Drive, Silver Springs, Maryland, 20910 (1970).

6) LESSON EVALUATION: Pre-assessment of student background (experience, mechanical ability, general knowledge) and division into groups accordingly helped teachers understand students' needs better.

WEEK 1

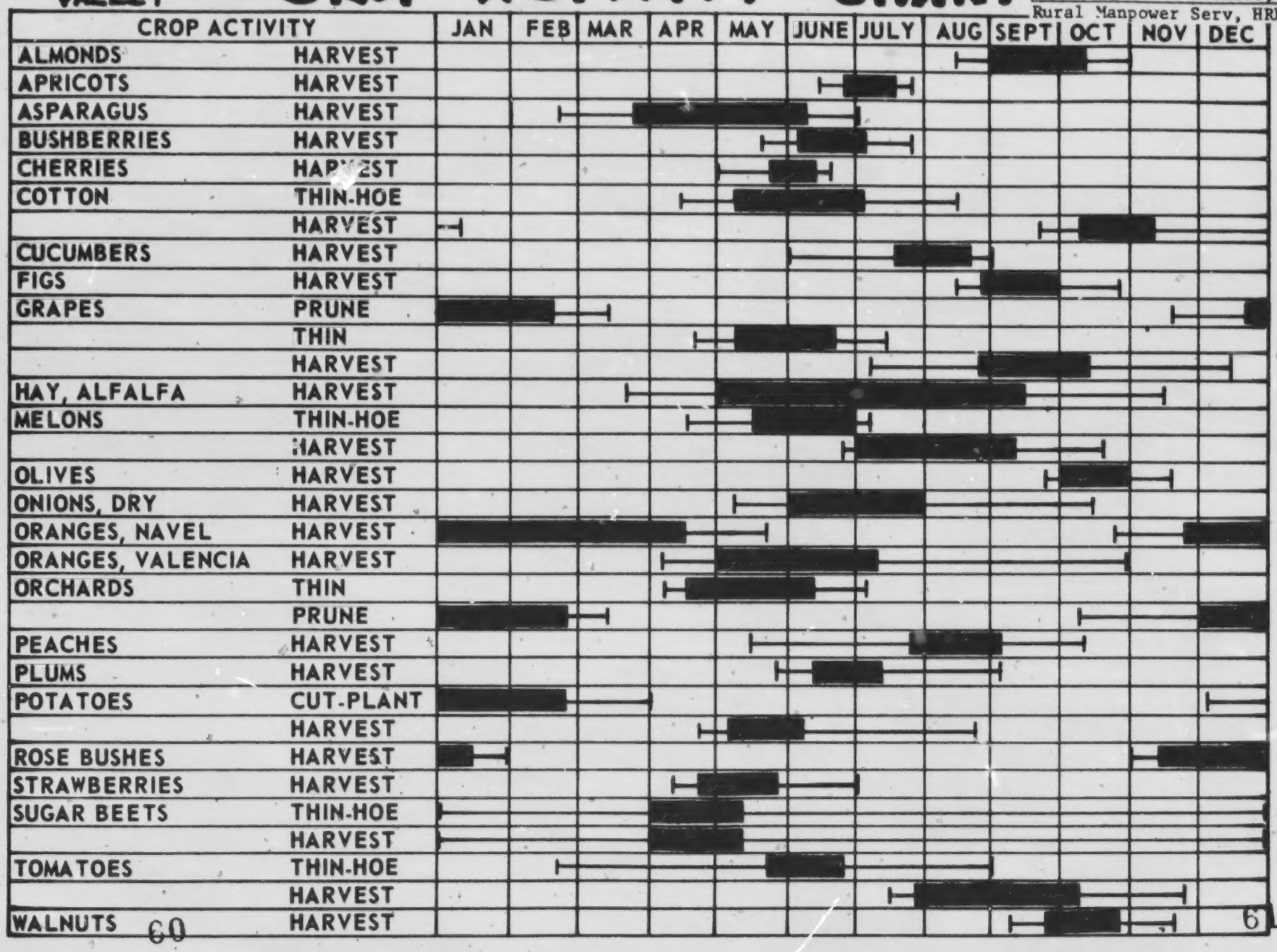
CLASSROOM TRAINING TIME CARD

EMPLOYEE _____ CLASS _____

DATE OF CLASS	IN	OUT	IN	OUT

SAN JOAQUIN VALLEY CROP ACTIVITY CHART

Adapted from: California Guide for Farm Workers, Rural Manpower Serv, HRD



ALPHABET & NUMBERS

Aa Bb Cc Dd Ee Ff Gg Hh
Ii Jj Kk Ll Mm Nn Oo Pp Qq
Rr Ss Tt Uu Vv Ww Xx Yy Zz

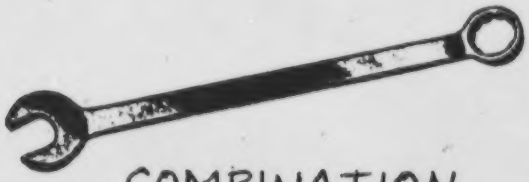
1 2 3 4 5 6 7 8 9 0 10, 11, 12,

Aa Bb Cc Dd Ee Ff Gg Hh
Ii Jj Kk Ll Mm Nn Oo Pp Qq
Rr Ss Tt Uu Vv Ww Xx Yy Zz

CRESCENT WRENCH

ALLEN WRENCH

BOX-END WRENCH



COMBINATION WRENCH

MONKEY WRENCH

OPEN-END WRENCH

PIPE WRENCH

FILES

DOUBLE CUT

HALF ROUND

ROUND FILE

SINGLE CUT

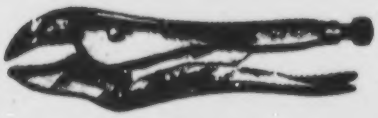
3 SQUARE

WOOD RASP

BATTERY PLIERS

WIRE CUTTERS or Side Cutting Pliers

224 FENCE PLIERS



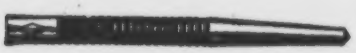
VISE GRIPS

ELECTRICIANS PLIERS

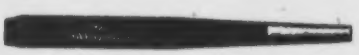
NEEDLE-NOSE PLIERS

COMBINATION PLIERS

WATER PUMP PLIERS



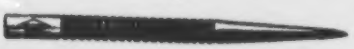
CENTER PUNCH



DRIFT PUNCH

NAIL SET

PIN PUNCH



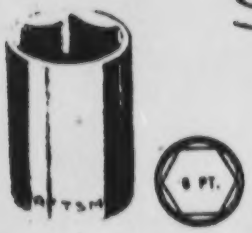
PRICK PUNCH

LEATHER PUNCH

EXPANSION REAMER

TAPER REAMER

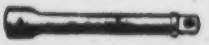
SOCKETS



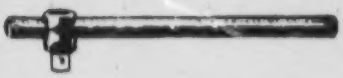
.6 (SIX) POINT

8 POINT
EIGHT PT.

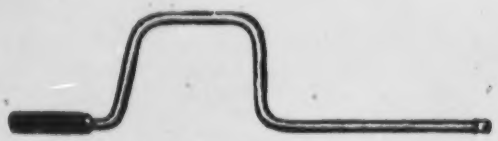
12 POINT



SOCKET
EXTENSION

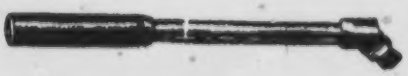


T-BAR



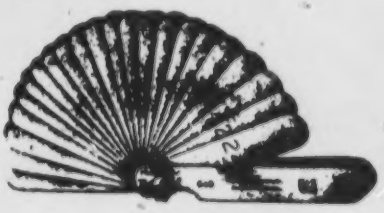
SPEED
HANDLE

RATCHET

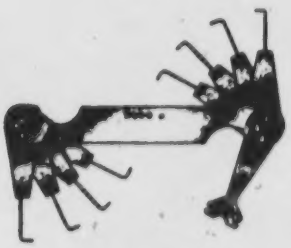


BREAKER BAR

UNIVERSAL
JOINT



FEELER GAUGE



FEELER GAUGE

HACK SAW

HAND DRILLS

BIT BRACE

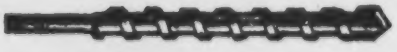
BREAST DRILL

HAND DRILL

DRILL BITS

STRAIGHT SHANK TWIST DRILL

TAPERED SHANK TWIST



MASONRY

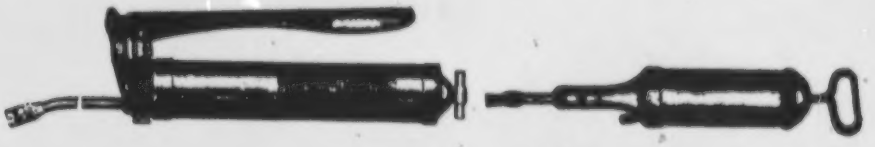
EXPANSION BIT

AUGER BIT

PUSH DRILL

GREASE GUNS

AIR-PRESSURE



LEVER-TYPE PUSH-TYPE

HATCHETS

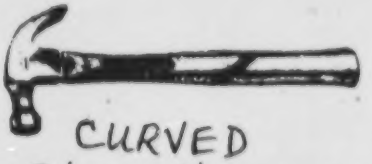
BROAD HATCHET

SHINGLER'S HATCHET

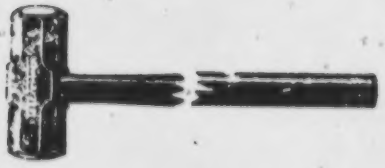
HAMMERS

BALL PEEN

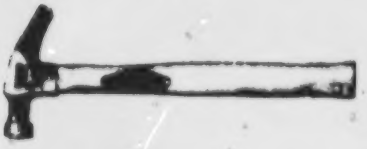
BLACKSMITH'S HAMMER



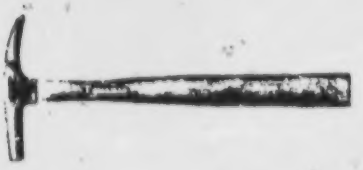
CURVED CLAW HAMMER



SLEDGE



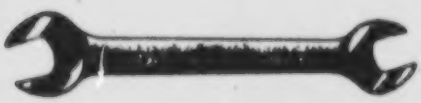
STRAIGHT CLAW

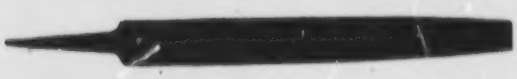


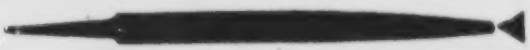
TACK HAMMER

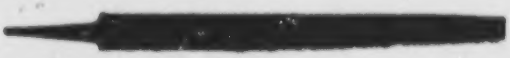
TINNER'S HAMMER

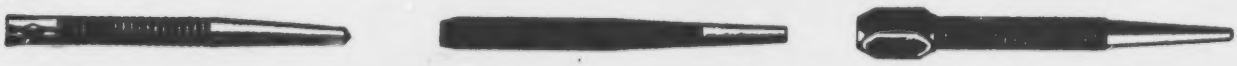
MALLET

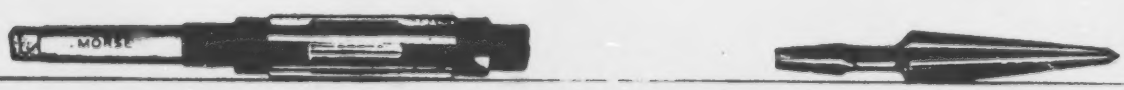












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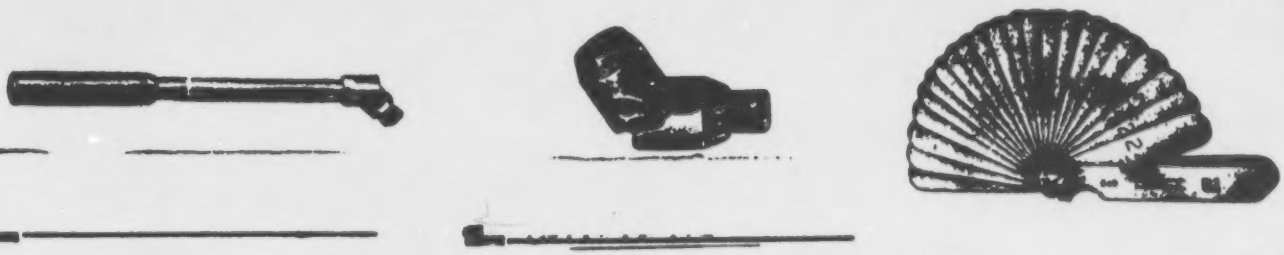

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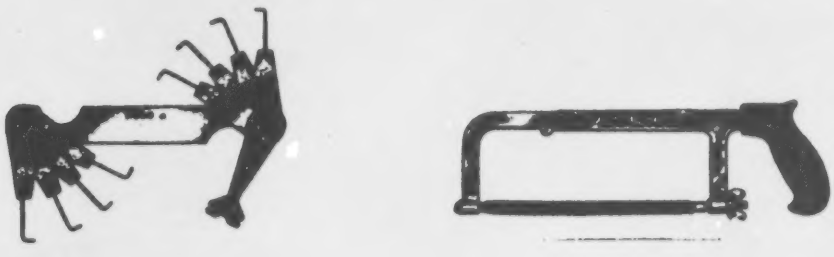
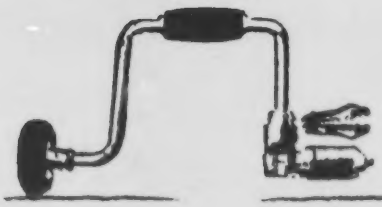
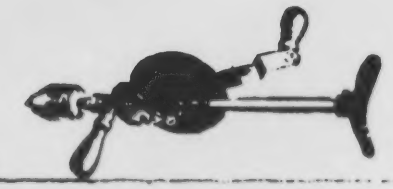
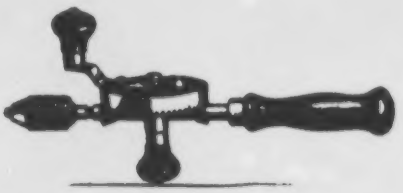
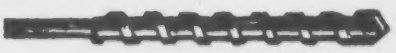
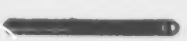


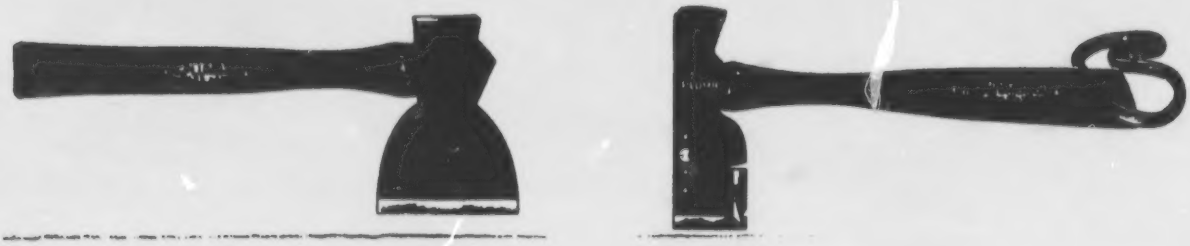


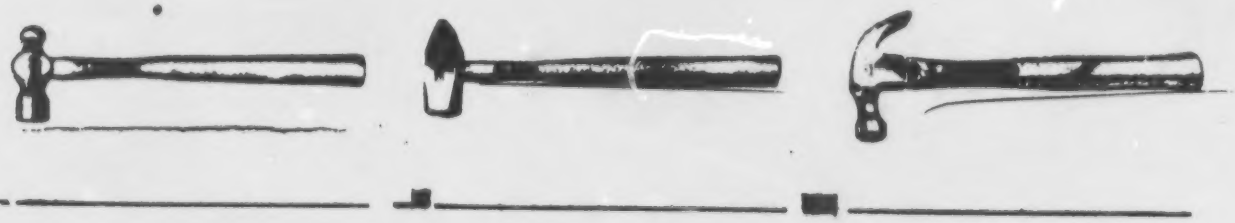












VESL LESSON PLAN **CLASS** ESL/ Farm Equipment Operation and Maintenance **WEEK #** 1 - Day 2

1) LESSON TOPICS: Identification & Use of Mechanic Tools

ESL

VOC

2) BEHAVIORAL OBJECTIVES:

ESL Student will be able to identify mechanics' tools and know their use in actual application and ge able to verbalize basic proper verbs and sentence structure.

VOC Be able to know the proper use of tools identified.

3) LESSON OUTLINE: (TEACHING METHODS, STUDENT ACTIVITIES, EVALUATION INSTRUMENTS)

ESL (AUDIO-LINGUAL METHOD) The instructors will verbally present models, followed by student repetition, until terminology is internalized. The instructors will make any corrections in pronunciation, and in usage of appropriate verbs. Individual and group drills.

Continue Lesson I of "Prevocational English Workbook I".

Introduce basic questions and answers with verbs pertaining to use of verbs: "What is this?" "It is a crescent wrench." "What do you do with it?" Answer: You use it to tighten, to loosen, to lift, to turn, to punch, to twist, to cut, to mark, to measure, to screw, to clasp, to grip.

VOC Tool identification game; by dividing the class into 2 teams and requiring that each team take turns identifying a tool selected by the instructors. A point is given to each side when a correct answer is verbalized.

Application: Have each student learn the use of each tool by assimulated demonstration. Also, identify by demonstration, each tool by its parts.

4) NEW VOCABULARY:

5) MATERIALS NEEDED: Mechanic tools, bench vise, bolts, screws, nuts.

6) LESSON EVALUATION: Testing of tool identification by game played; if tool not correctly identified, then students are drilled more until they identify correctly.

Question and answer testing of selected verb usage.

VESL LESSON PLAN CLASS ESL/Farm Equipment Operation and Maintenance WEEK # 2

1) LESSON TOPICS:

ESL Tractor Parts Identification

VOC Same

2) BEHAVIORAL OBJECTIVES:

ESL The student will be able to identify some parts of a tractor and show the location of each when asked (orally). Students will be able to verbalize other verbs related to the proper use of tools (previously introduced and identified).

VOC Students will learn where the tractor parts are located on the tractor.

3) LESSON OUTLINE: (TEACHING METHODS, STUDENT ACTIVITIES, EVALUATION INSTRUMENTS)

ESL There will be continued practice of verb usage and the students will be tested orally.

VOC The teacher will introduce the students to the shop area and the tractor and its parts, using a list of terminology previously selected by both teachers. The ag instructor will lead most of this instruction, with appropriate drills by the ESL instructor.

Application: Each student and group will recite the proper names of the parts of a tractor when instructor points to each. The students will show the location of each part and explain and show how each of the mechanics' tools are used.

(OBJECTIVES, continued) CLASS ESL/Farm Equipment Operation and Maintenance WEEK # 2

4) NEW VOCABULARY: The following is a list of tractor parts to be used in subsequent lessons to follow:

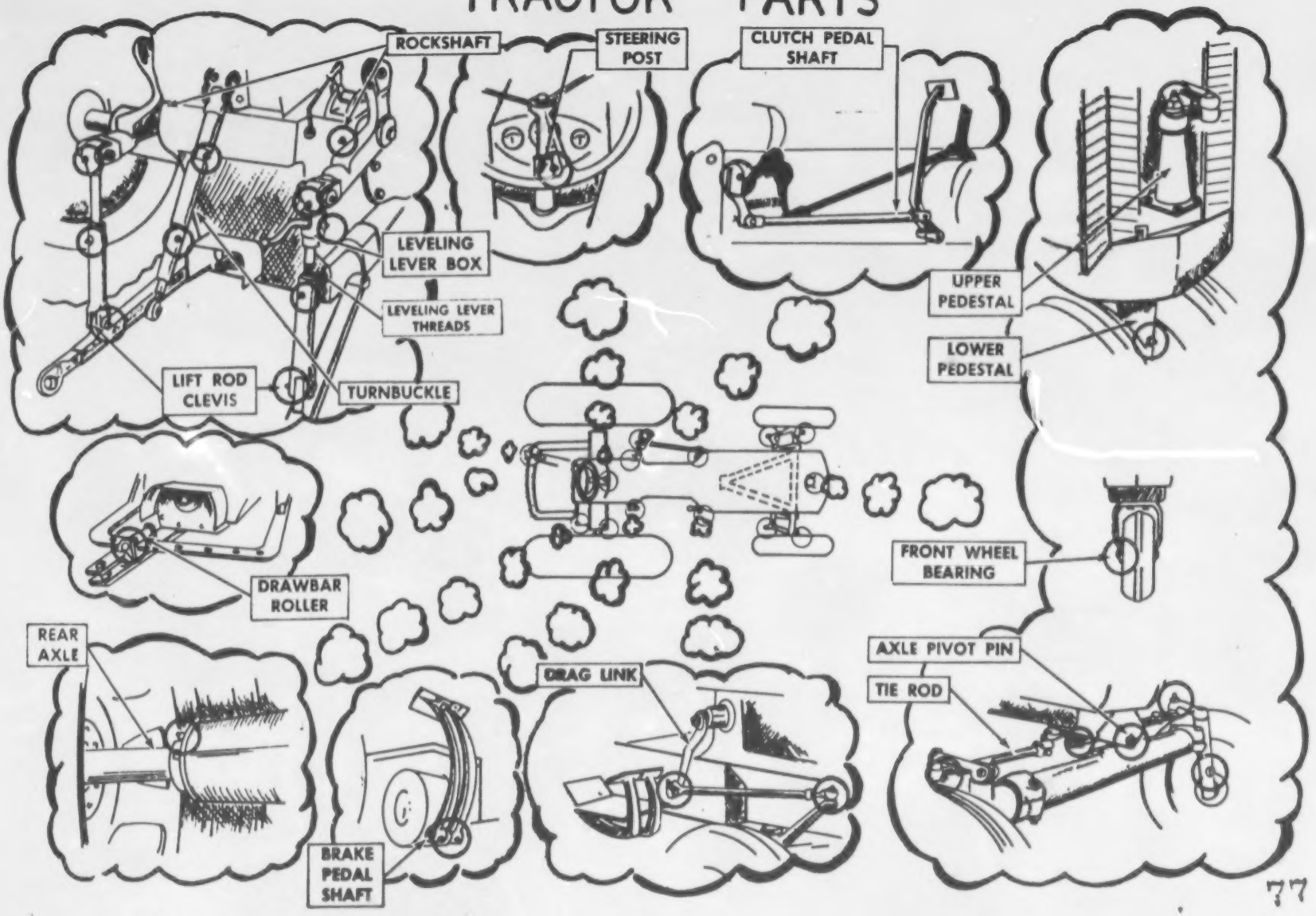
TRACTOR PARTS IDENTIFICATION

1. Engine
2. Transmission
3. Differential
4. Tire
5. Rim
6. Wheel Weight
7. Fender
8. Radiator
9. Radiator Cap
10. Radiator Hose
11. Oil Dip Stick
12. Power Steering Pump
13. Breather
14. Air Cleaner
15. Oil Pan
16. Fan
17. Fan Belt
18. Water Pump
19. Generator
20. Generator Pulley
21. Fuel Cap
22. Oil Filter
23. Fuel Filter
24. Fuel Valve
25. Gear Shift Lever
26. Power Take-Off Shift Lever
27. Clutch Pedal
28. Brake Pedal
29. Drawbar
30. Top Link
31. Lower Link
32. Hydraulic Lift Control Lever
33. Draft Control Lever
34. Auziliary Hydraulic Control
35. Hydraulic Coupler
36. Valve Stem
37. Hitch Pin
38. Linch Pin
39. Front Axle
40. Rear Axle
41. Fuel Injection Pump
42. Fuel Injection Line
43. Fuel Injector
44. Fuel Gauge
45. Temperature Gauge
46. Tachometer
47. Battery
48. Battery Cable
49. Throttle Control
50. Fuel Shut Off

5) MATERIALS NEEDED: One tractor in shop, mounted engines, mechanic tools.

6) LESSON EVALUATION: This was a fun lesson, especially with the introduction into the shop with all the machines, tractor, engines and equipment.

TRACTOR PARTS



VESL LESSON PLAN CLASS ESL/Farm Equipment Operation and Maintenance WEEK 3 - Day 1

1) LESSON TOPICS: Identification of Tools, Tool Parts, and Their Location in the Shop

2) BEHAVIORAL OBJECTIVES:

ESL The students will learn the names of the tools and parts and the locations where the tools and parts can be found.

VOC The students will learn the use of the tools and parts and the locations they would be found in and around a farm.

3) LESSON OUTLINE:

ESL The following are examples of questions asked: The teacher asks, "Where is the wrench?" (Substitute different tools and parts) The student answers, "It is on the _____." The teacher asks, "Do you know where the wrench is?" And the student answers, "yes" or "no" and gives the appropriate location. The students divide into groups of two and drill each other on answers and responses. Student Homework: Speak English at home as much as possible.

VOC

Same

4) NEW VOCABULARY:

5) MATERIALS NEEDED:

Charts of tractor parts and their locations; tractor in shop; tools.

6) LESSON EVALUATION:

Teacher and Students will listen and repeat to gain correct answers, as well as correct pronunciation. Over-all, it is easier and more enjoyable for students to learn in the shop and with the tractor than in the classroom.

VESL LESSON PLAN CLASS ESL/Farm Equipment Operation and Maintenance WEEK # 3 - Day 2

1) LESSON TOPICS:

ESL Pre-Start Checks

VOC Same

2) BEHAVIORAL OBJECTIVES:

ESL The student will learn the meaning and verbal application of basic pre-start and tractor parts terminology.

VOC The student will be able to identify pre-start check items and also a selected number of tractor parts.

3) LESSON OUTLINE: (TEACHING METHODS, STUDENT ACTIVITIES, EVALUATION INSTRUMENTS)

ESL Key Terms:

1. Oil
2. Water
3. Fuel
4. Battery
5. Fan Belt
6. Tires
7. Loose Bolts

Each Student explains to one another how to perform the next pre-start check. Example: "Juan, please check the oil."
"Jose, please check for loose bolts."

Tractor Parts:

1. Radiator
2. Dip Stick
3. Battery
4. Starter
5. Gear Shift
6. Throttle

Each student asks one another to identify a part and ask its purpose. Example: Question, "Juan, what's the name of this part?"
Answer, "It's the radiator."
Question, "What does it do?"
Answer, "It cools the engine."

The instructor will write the names of the parts and their purpose on the chalkboard, listen to the students as they drill and make any corrections in pronunciation, definitions, etc.

(OBJECTIVES, continued) CLASS ESL/Farm Equipment Operation and Maintenance WEEK # 3 - Day 2

VOC The students will learn the function and purpose of the tractor parts identified and learn and perform the pre-start checks on the tractor itself.

4) NEW VOCABULARY: Pre-start check, oil, water, fuel, battery, gear shift throttle, fan belt, tires, loose bolts, radiator, dip stick, starter.

5) MATERIALS NEEDED: Tractor, handouts, wall charts.

6) LESSON EVALUATION: We needed more time to have all the students actually master all the terms and vocabulary, needing more drills on pre-start checks and performance, manuevering the tractor after pre-start checks and manuevering in slolam.

VESL LESSON PLAN CLASS ESL/Farm Equipment Operation and Maintenance WEEK 4 - Day 1

1) LESSON TOPICS: Pre-Start Checks

2) BEHAVIORAL OBJECTIVES:

ESL The students will continue to verbally identify with correct pronunciation.

VOC The student will be able to perform the basic pre-start checks on the tractor and start the tractor (diesel) afterwards. The students will perform the checks after the instructor demonstrates. About one-third of the students will perform this activity, as well as "start" the tractor during this session.

3) LESSON OUTLINE:

ESL The student will concentrate on verb usage and drills (review) for approximately 15 to 20 minutes.

VOC The students will be tested individually while the Ag instructor has the majority of students for other instruction (pre-start checks and start). Points to remember: 1) Keep record of test scores; 2) Choose five pre-selected tools of the 100 studied by students in previous lesson. Have students identify and explain the purpose of each for 100 points total (10 points for identification and 10 for purpose); 3) Counsel students on results of test.

4) NEW VOCABULARY:

There are no new words introduced, but more intensive drilling of vocabulary from the last lesson.

5) MATERIALS NEEDED:

Handouts, tractor.

6) LESSON EVALUATION:

Students basically familiar with general mechanics understood and could repeat the demonstrations of pre-start checks better than those students new to mechanics. The students paid attention to the demonstrations, particularly since they realized they would also be doing the pre-start checks in class.

Date: Nov. 6, 1979
Class: Farm Tractor/ESL
Unit: Tractor Operation
Lesson: Pre-Start Checks

KEY POINTS	ACTIVITY
1. Familiarize students with basic pre-start checks: a. Oil b. Water c. Battery d. Fuel e. Fan Belt f. Tires g. Loose Bolts	1. Have each student tell another to perform the next pre-start check: e.g.: "Juan, check the oil." "Jose, check for loose bolts."
2. Familiarize students with tractor parts: a. Radiator b. Dip Stick c. Battery d. Starter e. Gear Shift f. Throttle	2. Have each student ask another to identify a part and ask its purpose: e.g.: "Juan, what is the name of this part?" Answer: "Radiator" Question: "What does it do?" Answer: "It cools the engine."

The instructor will write the part and its purpose on the chalkboard.

VESL LESSON PLAN CLASS ESL/Farm Equipment Operation and Maintenance WEEK # 4 - Day 2

1) LESSON TOPICS:

ESL Pre-Starts and Parts Identification

VOC Same

2) BEHAVIORAL OBJECTIVES:

ESL The student will be able to give basic job instructions as well as understand them.

VOC The student will be able to identify parts of the tractor and their functions.

3) LESSON OUTLINE: (TEACHING METHODS, STUDENT ACTIVITIES, EVALUATION INSTRUMENTS)

ESL a) Example of verbs and tools drills:

Teacher: "What is this?" (showing tool)
Student: Student names the tool.
Teacher: "Please take this (tool) to him/them/Joe."
Student takes the tool where requested.
Teacher: "Please bring the tool to me." (Naming specific tool)
Student does as requested.
Teacher: "Please tell him/Juan to take this tool to Abdul/him/her."
Student does as requested.

The teacher drills the above by class and individual until mastery is developed. The students practice in small groups.

b) Identification of tractor parts and functions:

Teacher: "What is this?" (pointing to part on chart of tractor)
Student: "The radiator."
Teacher: "The radiator cools the water."
Student: (repeating) "The radiator cools the water."
Teacher: "What does the radiator do?"
Student: "It cools the water."

The teacher drills on other parts of the tractor and their functions, using format above and pattern.

VOC The students will continue with pre-start checks for those who have not done so yet. The students will also begin driving the tractor after the pre-start checks.

4) NEW VOCABULARY:

5) MATERIALS NEEDED:

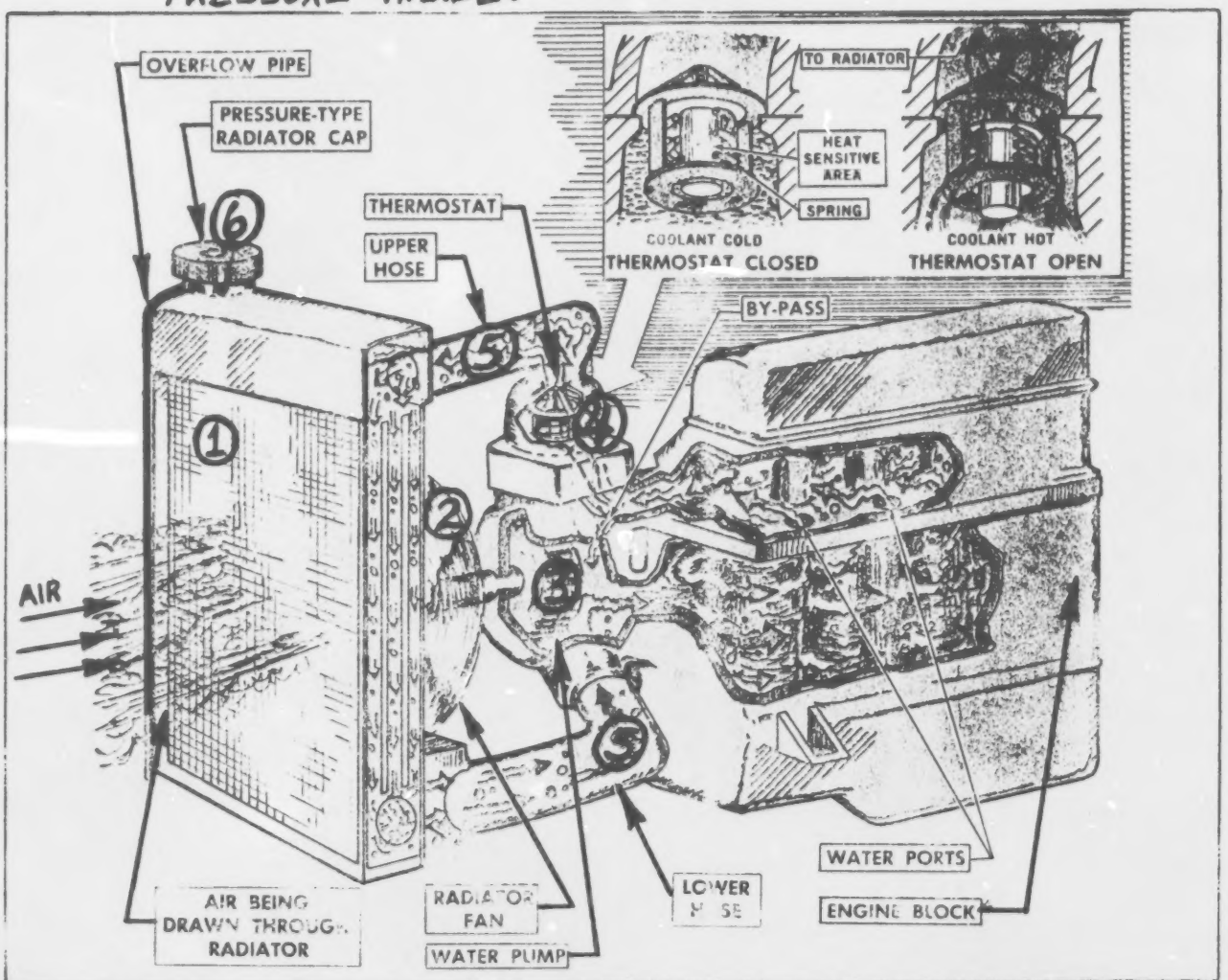
Tractor, handouts of tractor part identification and wall charts.
See Documentation for Handouts on page 168-b

6) LESSON EVALUATION:

A lot of review and repetition is needed for retention, especially since there are not only many new terms, but also many new concepts which the students have not been exposed to before, even in their native language.

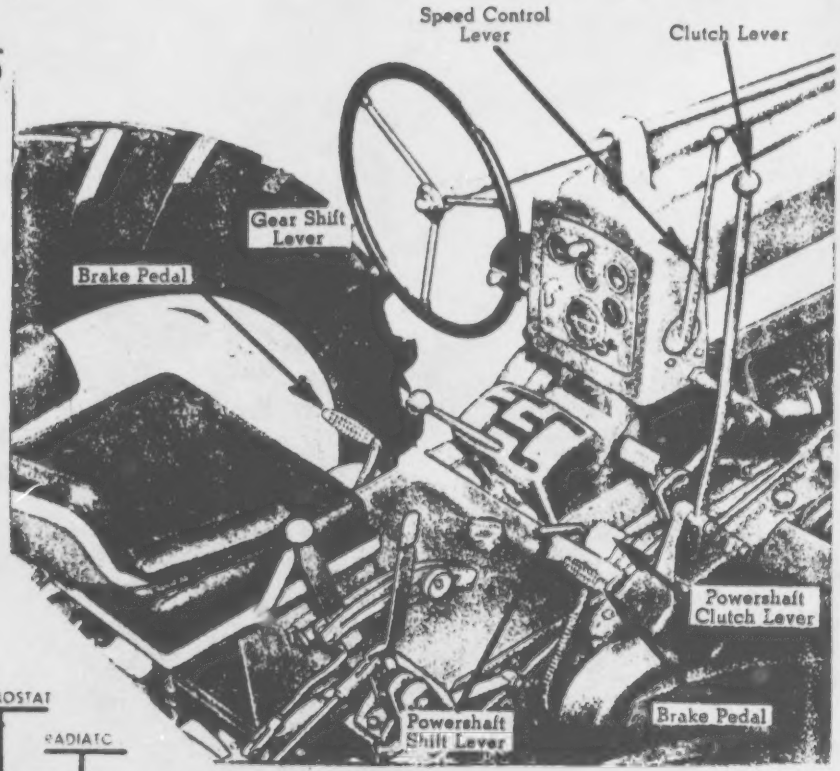
HOW THE COOLING SYSTEM WORKS

1. THE RADIATOR COOLS THE WATER.
2. THE FAN PULLS THE AIR THROUGH THE RADIATOR.
3. THE WATER PUMP FORCES WATER THROUGH THE ENGINE.
4. THE THERMOSTAT CONTROLS THE WATER TEMPERATURE.
5. THE HOSES CARRY THE WATER AROUND.
6. THE RADIATOR CAP KEEPS THE WATER AND THE PRESSURE INSIDE.



[redacted] Engine cooling system. Pump pushes heated coolant from inside engine block, past thermostat to the upper part of radiator, then down through the radiator tubes. The fan, on opposite end of shaft from pump, pulls air through the radiator tubes to help speed cooling. The coolant is then forced through the lower hose and pump back into the engine water jacket. (Inset) When the engine is cold the thermostat closes and blocks circulation until the coolant temperature reaches about 160°

THE GEAR SHIFT LEVER CHANGES THE GEARS.
THE CLUTCH LEVER ENGAGES OR DISENGAGES THE POWER SHAFT + TRANSMISSION.
THE BRAKE PEDAL STOPS THE TRACTOR.
THE SPEED CONTROL LEVER CONTROLS THE ENGINE SPEED — R.P.M.
THE AIR CLEANER CLEANS THE AIR.
THE TRANSMISSION TRANSFERS POWER FROM THE ENGINE TO THE WHEELS.
THE DIFFERENTIAL CONNECTS THE TWO REAR AXLES.



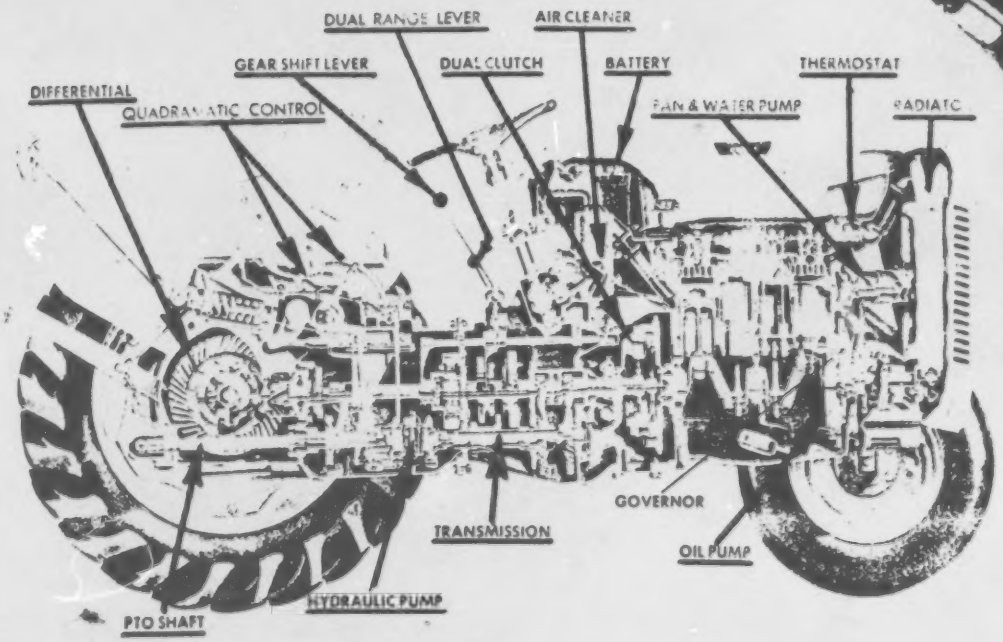
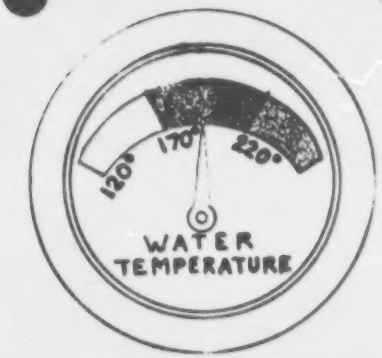


Fig. 1-10-Cutaway view of a modern tractor. Courtesy Massey-Ferguson

— THE OIL PUMP FORCES OIL THROUGH THE ENGINE.
— THE P.T.O. SHAFT HOOKS UP POWER TO THE IMPLEMENTS.
— THE HYDRAULIC PUMP FORCES OIL THROUGH THE HYDRAULIC SYSTEM.

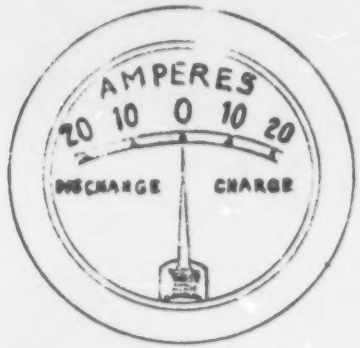
INSTRUMENT PANEL



THE TEMPERATURE GAUGE MEASURES THE TEMPERATURE OF THE WATER.

[redacted]. Keeping the operating temperature up on your tractor provides more horsepower and greater fuel efficiency.

THE TACHOMETER MEASURES RATE OF ENGINE SPEED.

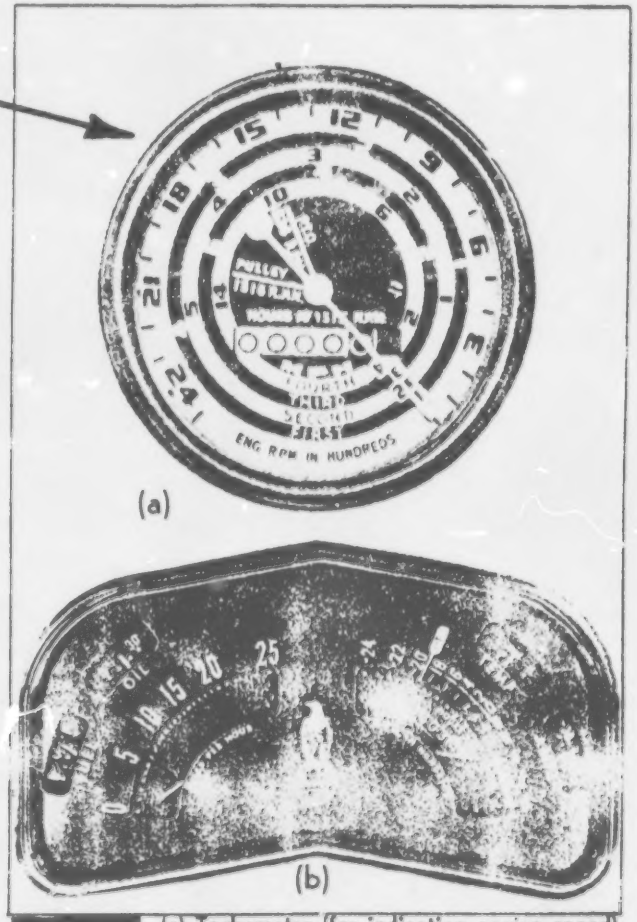


THE AMMETER MEASURES THE RATE OF BATTERY CHARGE OR DISCHARGE

[redacted]. The ammeter shows the rate of battery charge or discharge.

THE OIL PRESSURE GAUGE MEASURES RATE OF OIL PRESSURE.

[redacted]. If your oil-pressure indicator suddenly drops to zero, or points to the red area, stop your engine at once.



[redacted]. (a) Tachometer (for indicating engine speed) is often included with a speedometer and hour meter (for showing number of hours engine operates at a standard speed). Combination instruments of this type are known by such names as: "proofmeter," "tractormeter," "speed-hour meter," "operation meter" and "tachourmeter." (b) Instrument panel with speedometer (left) separated from tachometer and hour meter.

VESL LESSON PLAN CLASS ESL/Farm Equipment Operation and Maintenance WEEK # 5

1) LESSON TOPICS:

ESL Procedures for starting, stopping and maneuvering.

VOC Same

2) BEHAVIORAL OBJECTIVES:

ESL Students will be able to correctly pronounce and repeat terminology of start and stop procedures.

VOC Students will be able to correctly start, maneuver and stop diesel wheel tractor.

3) LESSON OUTLINE: (TEACHING METHODS, STUDENT ACTIVITIES, EVALUATION INSTRUMENTS)

ESL The instructor will demonstrate proper procedures and each student will repeat proper procedures.

a) START PROCEDURE (assuming pre-start checks have been made)

1. Set brakes
2. Neutralize gear shifts.
3. Disengage clutch
4. Set throttle (about ¼ open)
5. Disengage fuel shutoff
6. Start Engine
7. Check oil pressure
8. Set throttle at about 1000 rpms
9. Slowly engage clutch to allow transmission oil to warm
10. Observe temperature gauge (should rise before tractor is moved)
11. Unlock brakes, but keep foot on to keep tractor from rolling
12. Disengage clutch
13. Place shift in low range, reverse or third gear to suit
14. Release brake and slowly engage clutch until tractor is moving and clutch is fully engaged
15. Remove foot from clutch pedal
16. Adjust throttle to a safe speed

(OBJECTIVES, continued) CLASS ESL/Farm Equipment Operation and Maintenance WEEK # 5

VOC b) MANUEVER PROCEDURE

Students will drive tractor in a figure "8" pattern around barrels placed about 40 feet apart and return to parking position.

c) STOP PROCEDURE

1. Slow tractor with throttle to idle position
2. Disengage clutch and depress both brake pedals equally, until tractor stops
3. Engage fuel shut-off
4. Turn off starter key
5. Place gear shift levers in first gear
6. Engage clutch
7. Lock brakes

4) **NEW VOCABULARY:** maneuver, procedures, proper, neutralize, engage, disengage, release barrel, perform, pedal, lever, idle, idling, lock.

5) **MATERIALS NEEDED:** Tractor and two barrels.

6) **LESSON EVALUATION:** The teacher will observe the students' performance. This exercise generally went well. Some students performed steps by rote, rather than logical sequence and, therefore, became somwhat confused. The instructor pointed out the next step if the student indicated a need for help.

VESL LESSON PLAN CLASS ESL/Farm Equipment Operation and Maintenance WEEK 6

1) LESSON TOPICS: Pre-Start Checks (review)

2) BEHAVIORAL OBJECTIVES:

ESL Students will be able to correctly pronounce the terms of the pre-start checks and associated vocabulary.

VOC Students will be able to perform pre-start checks on the tractor.

The instructor will demonstrate each check and each student will repeat the procedure.

3) LESSON OUTLINE:

ESL PRE-START CHECKS:

1. Oil
2. Radiator
3. Battery
4. Power steering unit (if applicable)
5. Tires
6. Fan belt
7. Fuel
8. Loose bolts
9. Leaks

VOC

The instructor will demonstrate each check orally and have students repeat as each check is made, such as: "Check the oil" or "Check for loose bolts", etc. Each student will perform all eight checks.

4) NEW VOCABULARY:

5) MATERIALS NEEDED:

Tractor and shop towel.

6) LESSON EVALUATION:

The teach observed each student's performance. Review was conducted by having each student repeat all eight pre-start checks. Most students remembered all checks if given adequate time.

VESL LESSON PLAN CLASS ESL/Farm Equipment Operation and Maintenance WEEK # 7 - Day 1

1) LESSON TOPICS: Identification of Tractor Parts

ESL

VOC

2) BEHAVIORAL OBJECTIVES:

ESL Students should be able to properly pronounce and spell the fifty tractor parts. (List parts names on chalkboard. Students note and repeat verbally. Test by listing parts on numbered test sheet by aides of notes. See attached list of terms.)

VOC Students should know the names of fifty tractor parts and be able to identify the fifty tractor parts.

3) LESSON OUTLINE: (TEACHING METHODS, STUDENT ACTIVITIES, EVALUATION INSTRUMENTS)

ESL
a) Over a period of about four weeks, employ a constant review of tractor parts by aid of charts and actual tractor.
b) Incorporate terms into ESL development.
c) Point out and pronounce part name for students; have students repeat.

VOC Same

4) NEW VOCABULARY: TRACTOR PARTS IDENTIFICATION:

1. Engine
2. Transmission
3. Differential
4. Tire
5. Rim
6. Wheel weight
7. Fender
8. Radiator
9. Radiator Cap
10. Radiator Hose
11. Oil Dep Stick
12. Power Steering Pump
13. Breather
14. Air Cleaner
15. Oil Pan
16. Fan
17. Fan Belt
18. Water Pump
19. Generator
20. Generator Pulley
21. Fuel Cap
22. Oil Filter
23. Fuel Filter
24. Fuel Valve
25. Gear Shift Lever
26. Power take-off shift lever
27. Clutch Pedal
28. Brake Pedal
29. Drawbar
30. Top Link
31. Lower Link
32. Hydraulic lift control lever
33. Draft Control Lever
34. Auxiliary Hydraulic Control
35. Hydraulic Coupler
36. Valve Stem
37. Hitch Pin
38. Linch Pin
39. Front Axle
40. Rear Axle
41. Fuel Injection Pump
42. Fuel Injection Line
43. Fuel Injector
44. Fuel Gauge
45. Temperature Gauge
46. Tachometer
47. Battery
48. Battery Cable
49. Throttle Control
50. Fuel Shut-Off

5) MATERIALS NEEDED: Charts, tractor, 50 tags numbered 1 through 50, test sheet with blanks numbered 1 through 50.

6) LESSON EVALUATION: Students note each of 50 parts in notebook. Tag 50 parts on tractor. Student identifies by writing in part name with coinciding number. The spelling of terms was not emphacized during this lesson, mainly due to lack of time.

This was an enjoyable learning experience and was more like a game and an excellent learning device.

VESL LESSON PLAN CLASS ESL/Farm Equipment Operation and Maintenance WEEK # 7 - Day 2

1) LESSON TOPICS: Tractor Part Identification & Safety
ESL

2) BEHAVIORAL OBJECTIVES:

ESL The student will correctly pronounce in English the names of parts of the tractor. (50 terms) The student will learn pronounciation and sentence structure usage of safety terms.

VOC The student will identify verbally and in writing 50 parts of a diesel tractor. The student will learn some basic safety procedures of tractor and equipment operation and common errors.

3) LESSON OUTLINE: (TEACHING METHODS, STUDENT ACTIVITIES, EVALUATION INSTRUMENTS)

ESL Make use of the safety film strip by Ford Motor Company. The script was read and explained by the ESL instructor. Safety terminology and drills were conducted and also a group discussion.

Student identification of tractor parts on diesel tractor. Students had previous lesson plan and then found corresponding part on tractor. Each part on tractor was identified by part number.

VOC Same

4) NEW VOCABULARY:

5) MATERIALS NEEDED: Film, sheet of notepaper for each student and a Spanish/English (and vice versa) dictionary.

6) LESSON EVALUATION: A quiz was given the students and they were to correctly identify parts of the tractor. The students were to copy a list of safety words and terms and look up in the dictionary. The students were to copy a list of safety worda and terms and look up in the dictionary.

Need more time next class for definition of terms. The aid helped by writing the safety terms on chalkboard while film was shown and explained. Reduce required amount of material taught by half, in order to have time to cover everything.

Students were asked to operate the tractor safely in an obstacle course and also to be familiar with 50 safety terms and 50 tractor-part terms.

VESL LESSON PLAN CLASS ESL/Farm Equipment Operation and Maintenance WEEK # 8

1) LESSON TOPICS: Safe Tractor Operation and Review of Week 7

ESL

VOC

2) BEHAVIORAL OBJECTIVES:

ESL The student will develop familiarity with terminology common to tractor parts functions and safe tractor operation, specifically to tight-situation turning and maneuvering.

VOC a) The student will be able to maneuver the tractor through a course of barrels simulating an orchard situation/slalom course consisting of six barrels placed in a straight line, about 15 feet apart.

b) Student will become familiar with proper tractor stary and stopping procedures.

c) Student will learn to practice safe operating procedures.

3) LESSON OUTLINE: (TEACHING METHODS, STUDENT ACTIVITIES, EVALUATION INSTRUMENTS)

a) CONTENT:

1. Review safety and tractor parts functions.
2. Students will alternately drive tractor through a slalom course in groups of five.
3. Remaining students will review terms in classroom.
4. Aide can help students take notes.

b) 1. Review terms with Spanish/English dictionary.
2. Middle-Easterners practice writing alphabet. (Use handout Week 1.)

4) NEW VOCABULARY: New phrases: Use the right brake, use the left brake, safe, safety, safe operation, back up, drive forward, turn around, faster, slower, orchard, barrels, reverse, soft and hard ground, "Watch for trees and limbs", "Do not ride clutch".

5) MATERIALS NEEDED: Notebook, paper, pen/pencil, tractor and barrels, and Spanish-English dictionaries.

6) LESSON EVALUATION: Small groups on tractor worked well, even though cold weather was very uncomfortable if having to wait for several people before your turn came up. Working in small groups allows more time to study terms and also allows more time for individual tractor operation without pressure of large group watching.

Most students needed the exercice to familiarize themselves with break use and control of tractor operation in restricted space.

VESL LESSON PLAN CLASS ESL/Farm Equipment Operation and Maintenance WEEK 9

1) LESSON TOPICS: Review of Tractor Parts Identification; Examination and Tractor Operation.

2) BEHAVIORAL OBJECTIVES:

ESL The students will familiarize themselves with terms common to tractor operation. Students will continue to learn the correct pronunciation, meaning and usage of the terminology introduced during the last class session.

VOC Students will learn to maneuver tractor though a pre-set course to develop familiarity with controls and dimension of tractor. Students will be able to back a single axle implement through a pre-set course.

3) LESSON OUTLINE:

ESL

Day 1: Review identification of tractor parts learned during Weeks 3-8. Write on the board terms common to tractor operation. Have students repeat pronunciations. Show flash cards of words and have students read and explain each.

Day 2: Test.

VOC

Day 1: Demonstrate how to maneuver tractor following a certain course. Ask students to report of the different operational techniques used for the various maneuvers. Have each student drive tractor. Observe their ability to follow course; record observations.

Day 2: Test.

4) NEW VOCABULARY: Maneuver, in and out.

5) MATERIALS NEEDED: Tractor operation terms (See handouts Weeks 3-8); blackboard, chalk, flash cards, test.

6) LESSON EVALUATION:

ESL/Farm Equipment Operation and Maintenance Week 9, Day 1

Oral Test: Identification of Tractor Parts

1. "Where's the clutch pedal?"
   Answer: (Point to the part on the tractor.)
   Question: "What does it do?"
   Answer: "It engages or disengages the transmission from the engine."

2. "Where's the drawbar?"
   Answer: (Point to the part on the tractor.)
   Question: "What is it for?"
   Answer: "To pull or tow implements."

3. "Where's the upper link?"
   Answer: (Point to part on the tractor.)
   Question: "What is it for?"
   Answer: "To hook up implements and adjust the draft control."

4. "Where's the throttle control lever?"
   Answer: (Point to the part on the tractor.)
   Question: "What's it for?"
   Answer: "To speed up or slow down the tractor."

Week 9, Day 2

Performance Test:

Have each student back up the tractor with a single axle implement and observe for evaluation.

VESL LESSON PLAN CLASS ESL/Farm Equipment Operation and Maintenance WEEK 10

1) LESSON TOPICS: Tractor Start and Stop Procedures
This lesson includes proper procedures necessary for personal and equipment safety.

2) BEHAVIORAL OBJECTIVES:

ESL The student will be able to pronounce and understand the meaning of procedures.

VOC The student will be able to physically start and stop tractor in a safe and mechanically sound manner.

3) LESSON OUTLINE:

ESL The instructor will work with class drilling them on terminology and procedures. The students will pair off and alternately drill each other.

VOC The vocational instructor will work with three students at a time. Each student will demonstrate manipulative procedure for starting and stopping the tractor. Other students will observe prior to operation.

4) NEW VOCABULARY:

5) MATERIALS NEEDED: Procedure outline

6) LESSON EVALUATION: Each student will receive a good, fair or poor (G,F, or P) rating as operation is completed. The students will be informed as to their rating. Homework was assigned to review the procedures.

Practical application of this lesson was emphasized, which provided more understanding of the relationship between language skills and the operational skills.

The instructors recorded pertinent information regarding the rating of the operational portion and interpreting essential information. Aide facilities used included the tractor and implement backing exercise.

VESL LESSON PLAN CLASS ESL/Farm Equipment Operation and Maintenance WEEK # 11

1) LESSON TOPICS:

I. Review and Quiz on Tractor Parts and Functions.
II. Tractor and Implements Backing Exercise with Drawn-Type Implement, Implement Operation.

2) BEHAVIORAL OBJECTIVES:

ESL The students will be able to (1) verbally identify the various implements used and (2) explain their functions. Students will demonstrate their ability to correctly identify tractor parts and their knowledge of parts functions.

VOC The students will be able to hook up the implements, then back up with the side delivery rake, following a pre-set course.

The students will be able to operate the disk and plow.

3) LESSON OUTLINE: (TEACHING METHODS, STUDENT ACTIVITIES, EVALUATION INSTRUMENTS)

ESL DAY 1: Briefly review for quiz very generally to get students thinking about tractor parts and functions. Administer quiz, after explaining instructions clearly. Observe students having most problems for helping more individually later. Design the quiz to concentrate on identification of parts and their functions. Give an oral quiz to students for their answering questions in English, preferrably using complete sentences.

Teacher: "What does _____ do?"
Student: "The _____ does _____."

DAY 2: The students will go outside to learn identification of implements: the various disks, etc. Use flash cards for the students to identify the written names of the implements.

VOC

DAY 1: Quiz, use format shown in ESL, but concentrate on the students explaining the functions.

DAY 2: While showing how to hook up and operate the various implements, use vocabulary introduced in ESL lesson. Have teacher aide record performance of students hooking up and operating. Give students ample opportunity to practice.

4) NEW VOCABULARY: Words associated with drawn-type implements to back up or operate.

5) MATERIALS NEEDED: Format for quiz.

6) LESSON EVALUATION: The students need more time on Day 2 exercises. Concerning the quiz, generally the students with more proficient English and better attendance performed better on the test.

VESL LESSON PLAN CLASS ESL/Farm Equipment Operation and Maintenance WEEK # 12

1) LESSON TOPICS: Carburetor & Ignition System/Distributor

ESL The students will learn parts typical to gasoline engines and their functions.

VOC Same.

2) BEHAVIORAL OBJECTIVES:

ESL The student will learn terms and functions of the carburetor and ignition system. (See attached list of terms.)

VOC The student will understand the theory and function of the carburetor and distributor.

3) LESSON OUTLINE: (TEACHING METHODS, STUDENT ACTIVITIES, EVALUATION INSTRUMENTS)

ESL FIRST HALF OF PERIOD:

a) Students copy terms and draw schematic of carburetor from chalkboard
b) Label parts
c) Discuss use

SECOND HALF OF PERIOD:

a) Identify engine parts on demo engine
b) Dismantle carburetor
c) Discuss parts, functions & adjustments.

VOC FIRST HALF OF PERIOD:

a) Students copy terms onto mimeo copy of distributor
b) Students copy schematic of ignition and label parts, discussing theory and functions

SECOND HALF OF PERIOD:

a) Demonstration of dismantling, reassemblying and timing of a distributor
b) Identification of parts
c) Dismatled, adjusted and reassembled and started engine.

(OBJECTIVES, continued) CLASS ESL/Farm Equipment Operation and Maintenance WEEK # 12

4) NEW VOCABULARY:

CARBURETOR

1. Air Horn
2. Fuel Bowl
3. Venturi
4. Choke Plate
5. Throttle Plate
6. Main discharge nozzle
7. Inlet needle valve
8. Float
9. Idle fuel adjustment needle

FUEL PUMP

DISTRIBUTOR

1. Distributor Base
2. Distributor Cap
3. Distributor Rotor
4. Distributor Shaft
5. Distributor Cam
6. Centrifugal Spark Advance Mechanism
7. Vacuum Spark Advance Mechanism
8. Ignition Points
9. Condenser

COIL

1. Primary Ignition Wire
2. Secondary Ignition Wire (Coil High tension lead)
3. Spark Plug Wires
4. Spark Plug

STARTER

1. Starter Solenoid
2. Starter/Ignition Switch

GENERATOR/REGULATOR

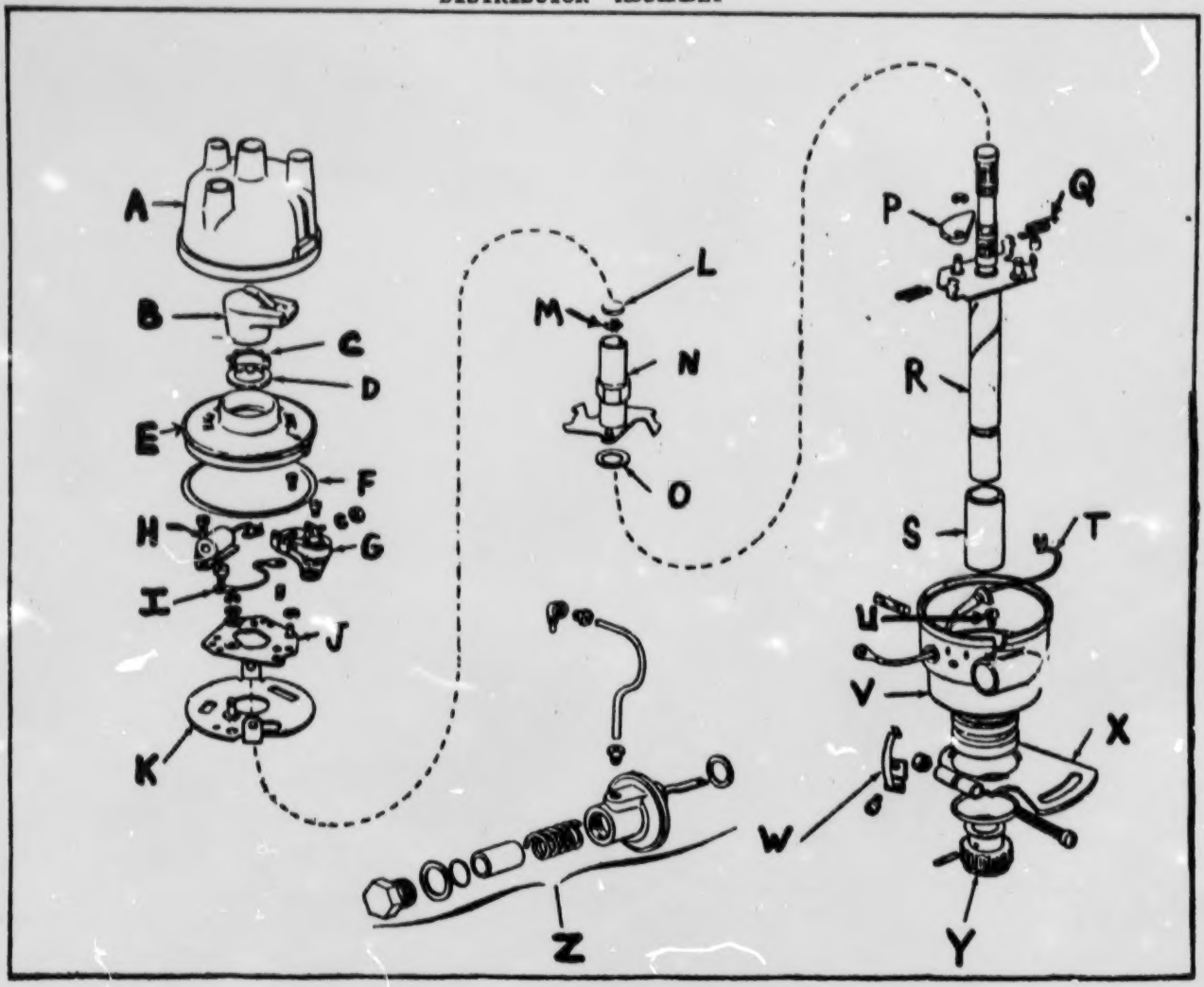
STEERING ASSEMBLY

1. Steering Wheel
2. Steering Shaft
3. Steering Gear
4. Steering Arm
5. Control Valve
6. Ram Cylinder
7. Ram Cylinder Pipes
8. Radius Rod
9. Connecting Rod
10. Drag Link
11. Spindle
12. Spindle Arm

5) MATERIALS NEEDED: Demonstration of engine, carburetor, distributor; distributor handouts, carburetor handout.
See Documentation for Handouts on page 168-b

6) LESSON EVALUATION: There were some new concepts learned during this week that were difficult to understand, not only due to the language barrier, but, also, in the students' native language. It is helpful to give explanations of details in the home language.

DISTRIBUTOR ASSEMBLY



PART IDENTIFICATION

A - CAP

B - ROTOR

C - SEAL RETAINER

D - SEAL

E - DUST COVER

F - O-RING

G - BREAKER POINT ASSEMBLY

H - CONDENSER

I - GROUND WIRE

J - UPPER PLATE BREAKER

K - LOWER BREAKER PLATE

L - LUBRICATION WICK

M - CAM RETAINER

N - DISTRIBUTOR CAM ASSEMBLY

O - THRUST WASHER

P - WEIGHT

Q - WEIGHT SPRING

R - DISTRIBUTOR SHAFT

S - BRUSHING

T - PRIMARY WIRE

U - SCREW & LOCK WASHER ASSEMBLY

V - BASE

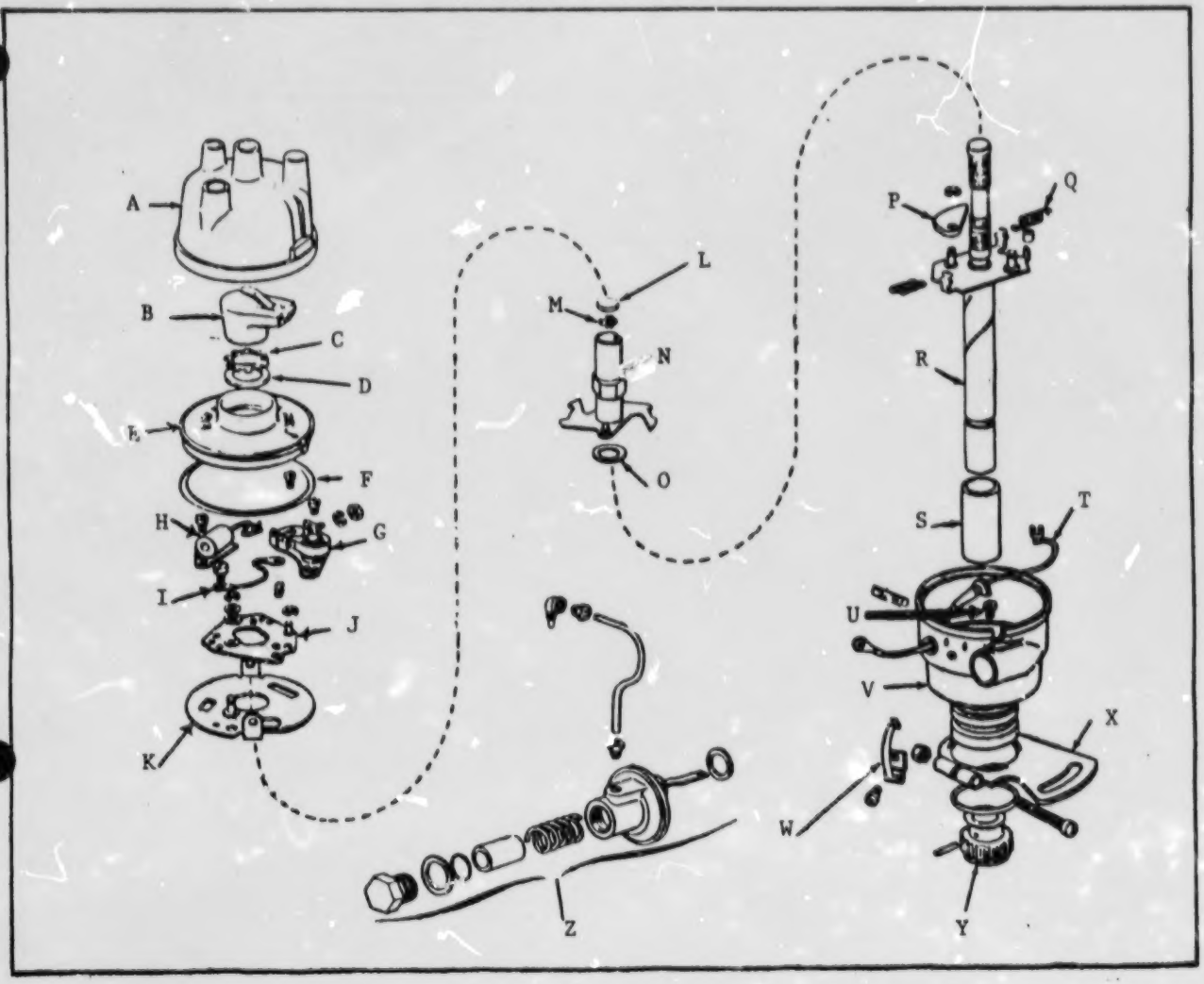
W - BRACKET AND CLAMP ASSEMBLY

X - TIMING CLAMP

Y - DRIVEN GEAR

Z - VACUUM ADVANCE ASSEMBLY

DISTRIBUTOR ASSEMBLY



DIRECTIONS: PLEASE WRITE THE NAMES OF THE PARTS SHOWN ABOVE.

A - _____

B - _____

C - _____

D - _____

E - _____

F - _____

G - _____

H - _____

I - _____

J - _____

K - _____

L - _____

M - _____

N - _____

O - _____

P - _____

Q - _____

R - _____

S - _____

T - _____

U - _____

V - _____

W - _____

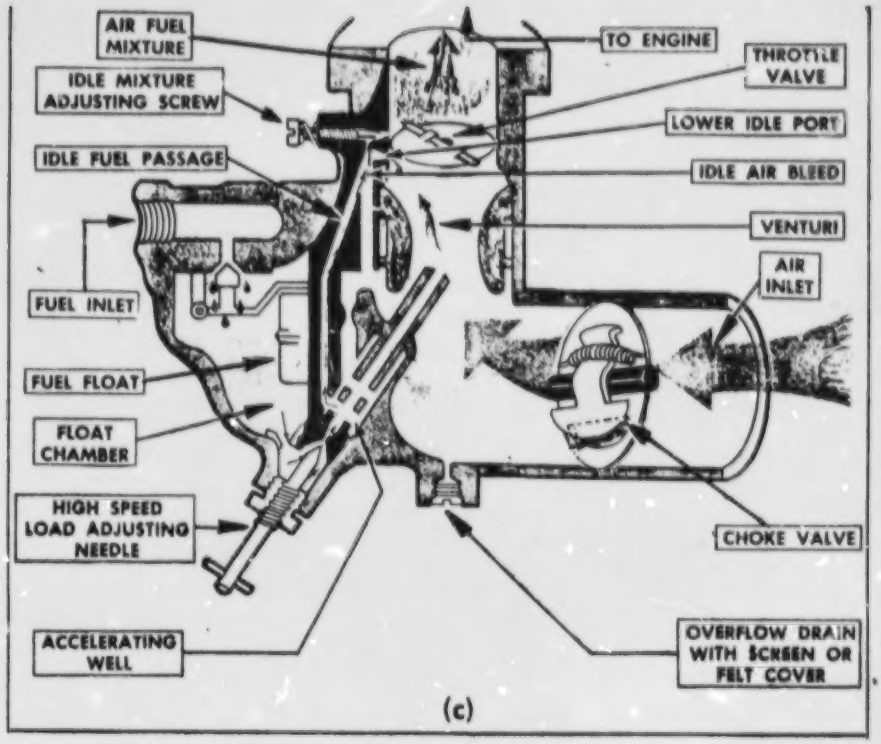
X - _____

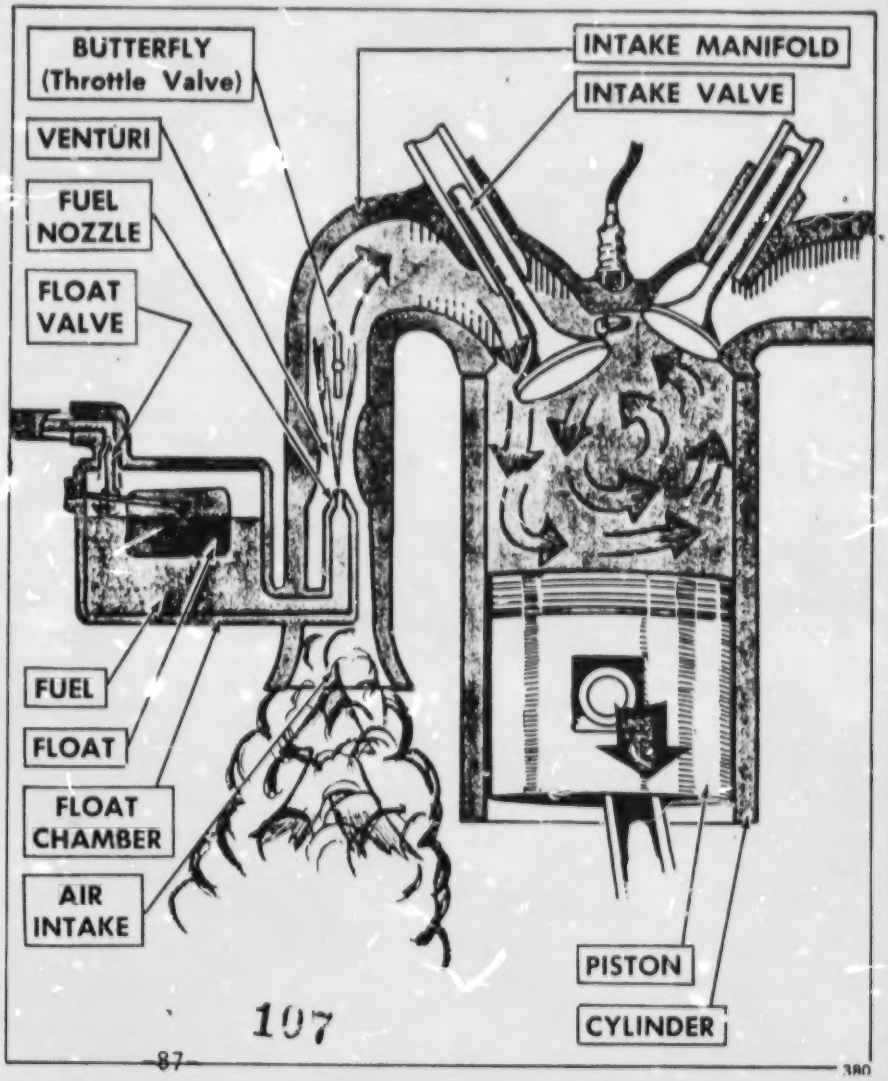
Y - _____

Z - _____

CARBURETOR

A DEVICE THAT MIXES AND MEASURES AIR WITH GASOLINE SPRAY TO MAKE AN EXPLOSIVE MIXTURE IN AN INTERNAL COMBUSTION ENGINE.





The function of the carburetor is to provide the proper mixture of air and fuel to the engine. Under normal operating conditions, the mixture is about 13½ pounds of air to one pound of fuel or an air-to-fuel ratio of 13.5:1.* However, an engine will run on ratios varying from as rich as 7:1 to as lean as 20:1.

*A common way of stating the proportion of air to fuel is by *volume*. One gallon of fuel requires about 9,000 gallons of air for combustion in an engine. In the ratio of 13.5 :1, *weights* of air and fuel are used in place of volume as a more practical means of expressing air-fuel ratio. Air weighs about 1.22 oz. per cubic foot under standard conditions.

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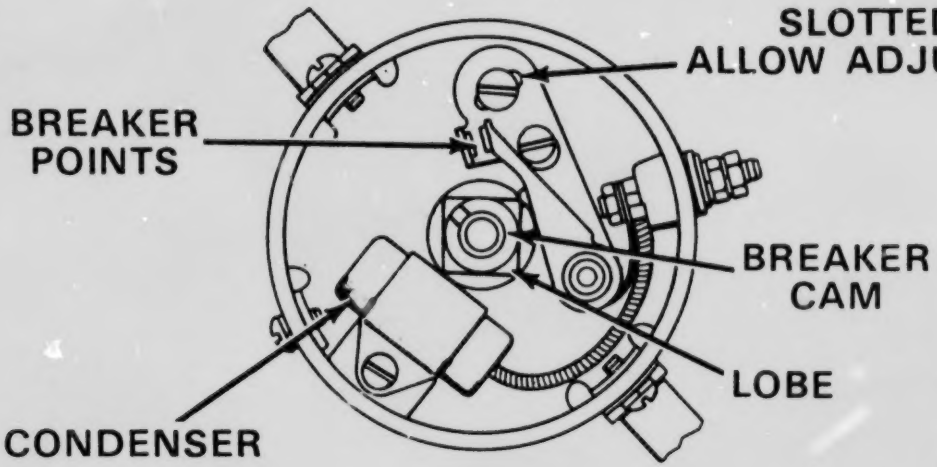
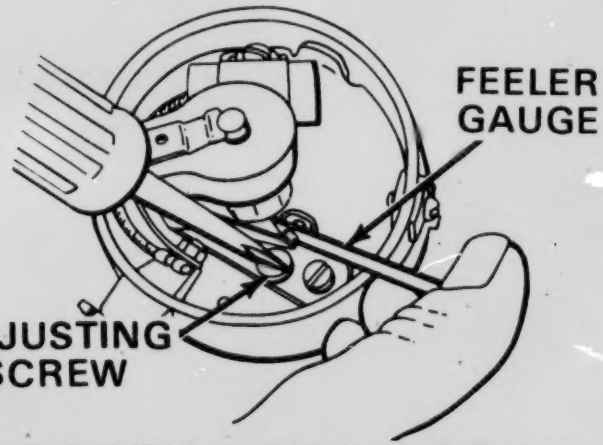
HOW TO ADJUST DISTRIBUTOR





A - LOOSEN LOCK SCREW
B - ADJUST POINTS WITH ADJ. SCREW

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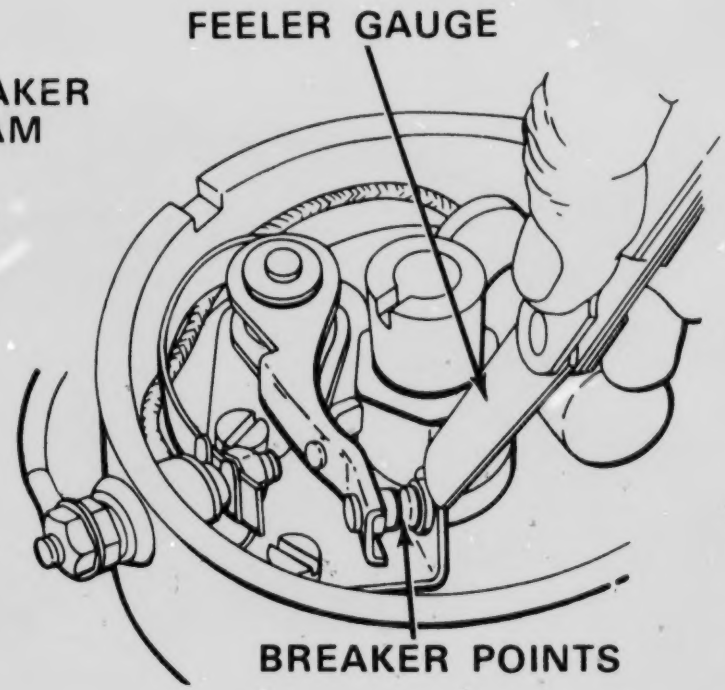

USING FEELER GAUGE

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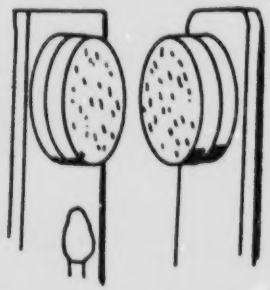
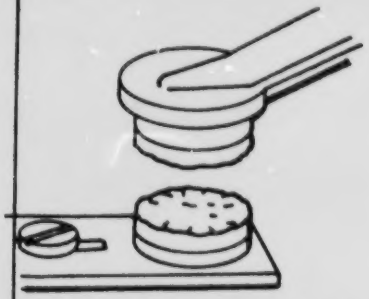
IGNITION POINT PROCEDURES



A. POINTS SLIGHTLY PITTED.

B. FILE POINTS SMOOTH WITH IGNITION FILE.



C. REPLACE BADLY PITTED OR ROUGH POINTS.

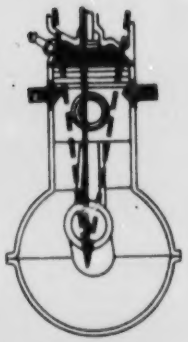
NOT PARALLEL

NOT ALIGNED

PROPER ALIGNMENT

WHY IS "SPARK ADVANCE" NECESSARY?

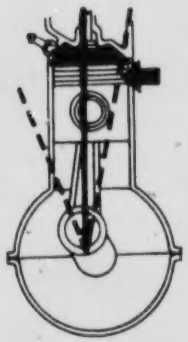
4° BTDC



1000 RPM . . . CRANKSHAFT, PISTON, ETC.
TURNS 5976 DEGREES/SEC.

-90-

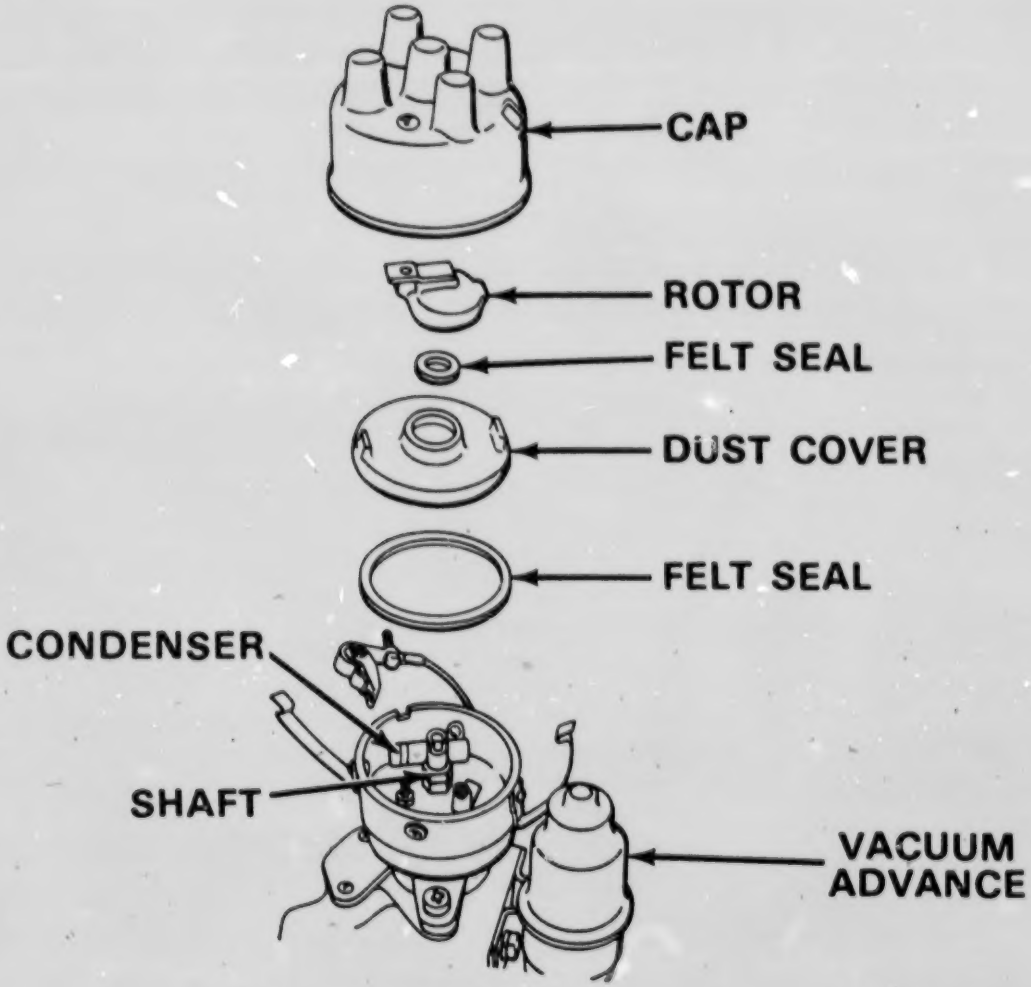
20° BTDC



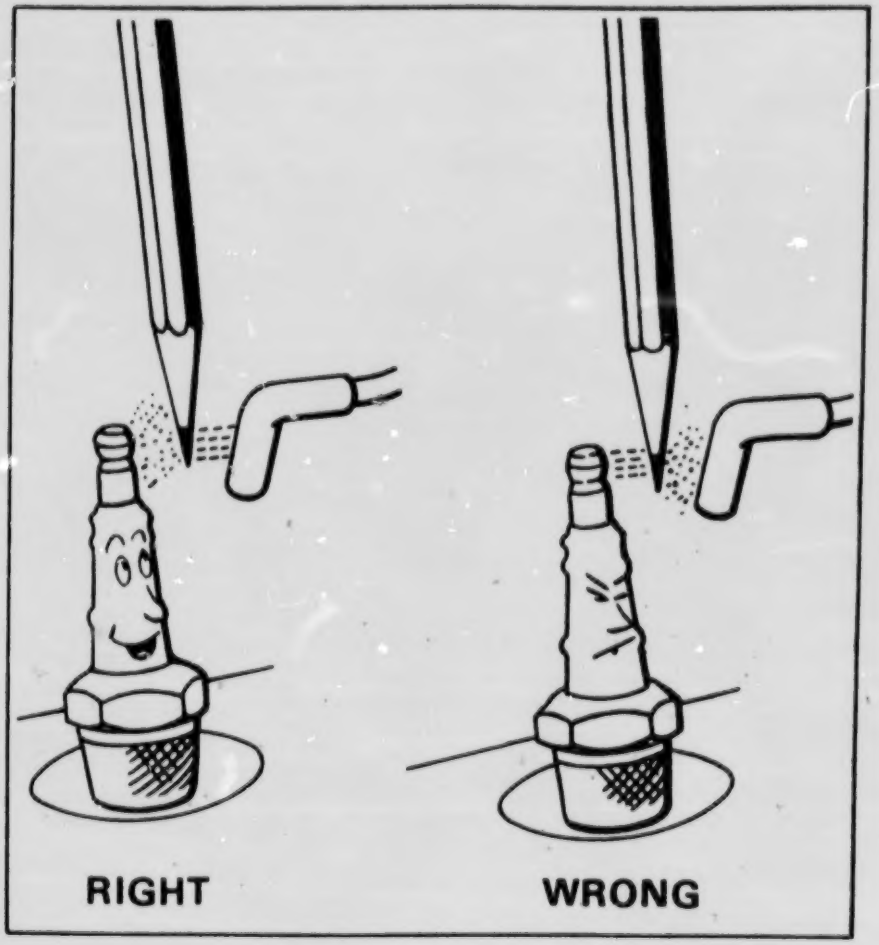
2000 RPM . . . CRANKSHAFT, PISTON, ETC.
TURNS 11,952 DEGREES/SEC.

Yet fuel does not burn any faster at higher rmps—
SO, FUEL IS IGNITED SOONER (advanced)
to allow fuel to burn during maximum compression

PARTS OF A DISTRIBUTOR



POLARITY (DIRECTION OF CURRENT) IS IMPORTANT

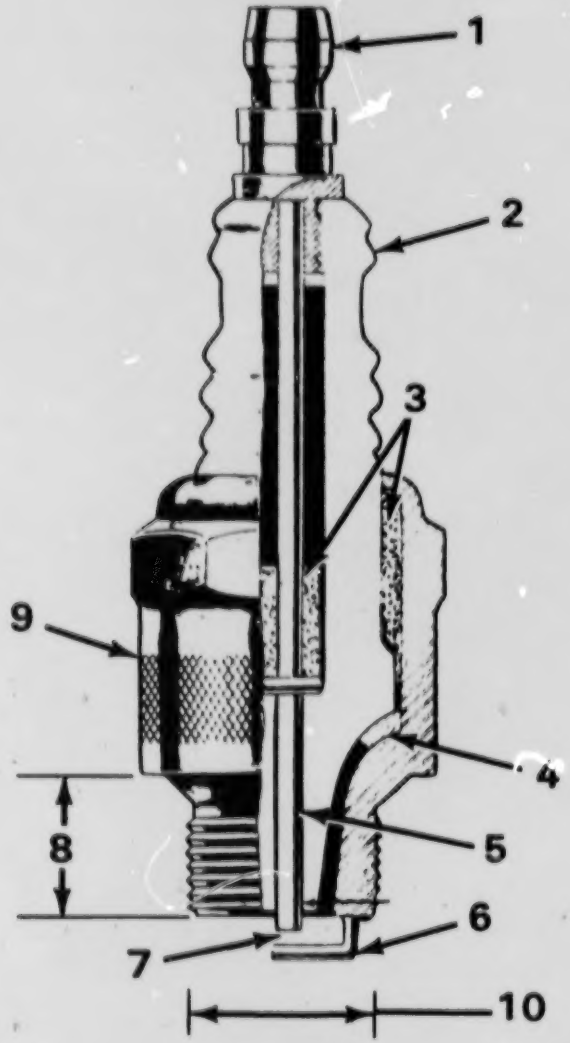


REMOVING SPARK PLUGS

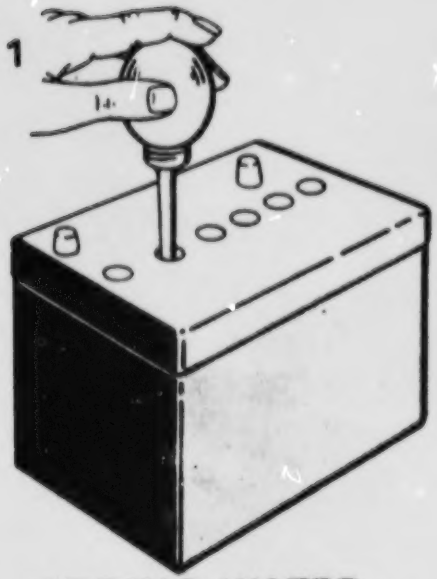
1. Pull up only on connector to remove wire.
2. Hold socket wrench straight while loosening plug.
3. Remove dirt from around plugs before removing.

Place plugs i. order for ea. identificatio.

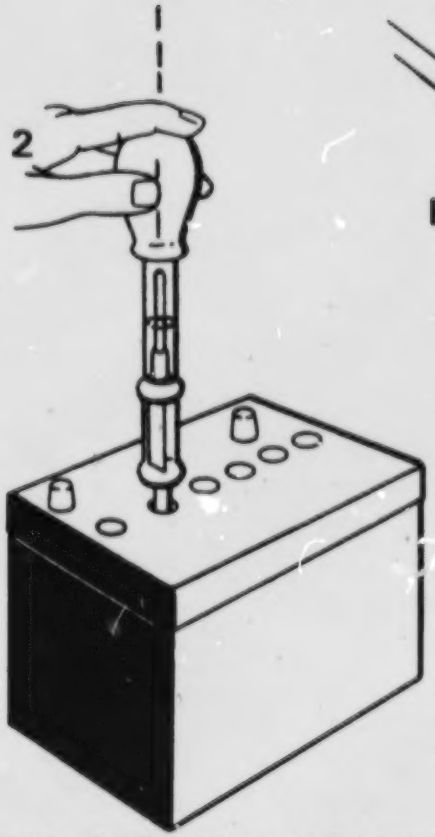
PARTS OF A SPARK PLUG



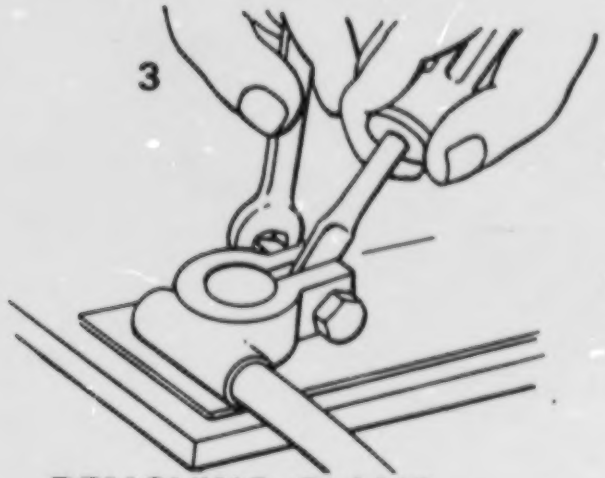
BATTERY MAINTENANCE SKILLS



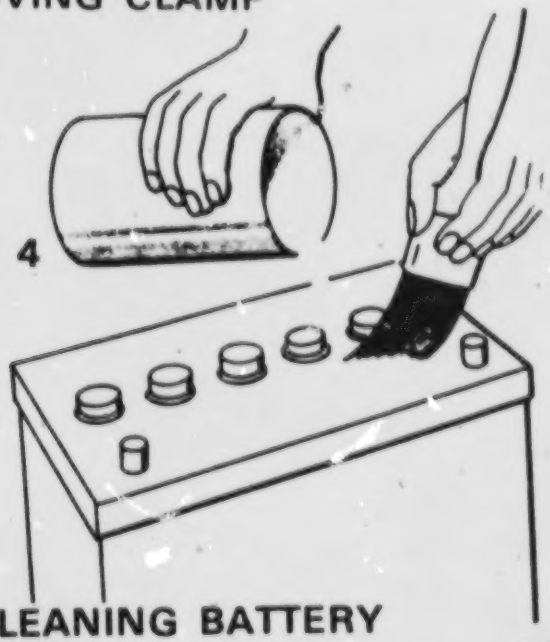
ADDING WATER



CHECKING SPECIFIC GRAVITY



REMOVING CLAMP



CLEANING BATTERY

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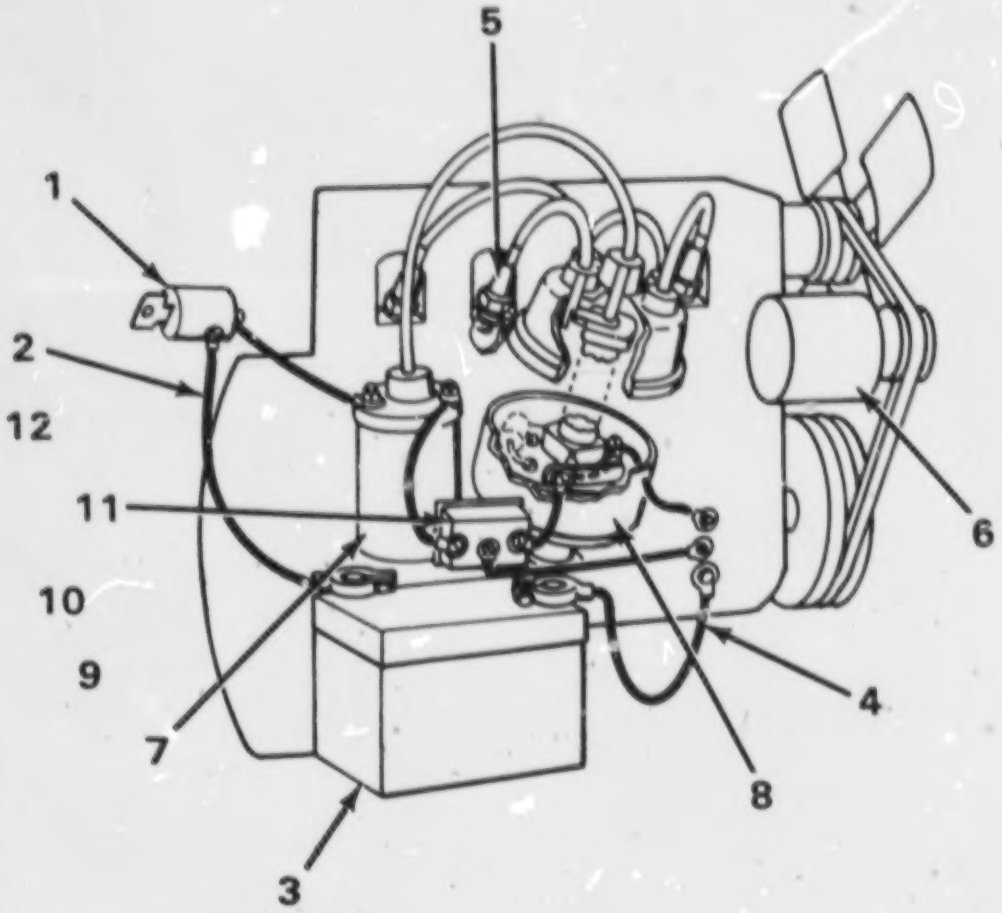
CAN YOU NAME PARTS OF ELECTRICAL SYSTEM?



VESL LESSON PLAN CLASS ESL/Farm Equipment Operation and Maintenance WEEK 13

1) LESSON TOPICS: Review of Previous Week
(Distributor parts, Ignition system schematic & Ignition system timing)

2) BEHAVIORAL OBJECTIVES:
ESL Complete objectives from last week.

VOC Same

3) LESSON OUTLINE:
ESL a) Review ignition system terms and electrical continuity.

b) Review distributor adjustment and timing.

c) Have students perform timing exercise.

VOC Same

4) NEW VOCABULARY:
See handout.

5) MATERIALS NEEDED:
See handout.

6) LESSON EVALUATION:

IGNITION TIMING PROCEDURE

1. Set the ignition points to the proper gap.
2. Loosen the number 1 spark plug about two turns.
3. Turn the crankshaft until the number one piston is at the top dead center (TDC) or about four degrees before TDC on the compression stroke.
4. Locate the place on the distributor base where the rotor should point when it's in position for the number one spark plug to fire.
5. Put the distributor in the engine. Make sure the rotor is pointing towards number one position which is marked on the distributor base.
6. Place the distributor timing clampbolt in its position, but do not tighten it.
7. Turn (rotate) the distributor as far as possible in the same direction as the rotor turns.
8. Turn on the ignition key.
9. Rotate the distributor in the direction opposite to the rotor rotation until spark occurs at the ignition points.
10. Tighten the distributor timing clamp.
11. Put (place) the distributor cap on the distributor base.
12. Replace all wires.
13. Start the engine.
14. Check the timing with the timing light.

IGNITION TIMING QUESTIONS & ANSWERS

1. How do you locate Top Dead Center (TDC) on an engine? You look for the timing numbered markings on the flywheel. Zero indicates TDC. Markings are also found on the fan belt pulley.

2. What do you do if the timing marks are hard to see? Mark over them with chalk so you can see them easier.

3. Which spark plug do you loosen or remove for timing? If you are working by yourself, loosen the number 1 spark cylinder from number 1 cylinder. Loosen two or three turns so you can hear air escape past it on the compression stroke. This will help you tell when the number 1 cylinder is on the compression stroke.

4. How do you set the breaker points to the engine? Crank the engine until number 1 cylinder starts the compression stroke. Be certain that the ignition switch (key) is turned off. Turn the engine until the cam opens the breaker points to the widest position or gap.

5. How do you crank the engine? Touch the starter lightly until the cam is in position at its high lobe, or put the transmission in high gear and rock the tractor with the rear wheels. Also, with wrench on the front end of the crankshaft.

6. What position are the valves on the intake stroke? Compression stroke? Power stroke? Exhaust Stroke?

Stroke	Intake Valve	Exhaust Valve
Intake	Open	Closed
Compression	Closed	Closed
Power	Closed	Closed
Exhaust	Closed	Open

7. What happens when timing is too advanced (early)? Too retarded (Late)? When it's too advanced, the engine may knock and can also cause high temperatures within the cylinder and lose power. When the timing is too retarded, the retarded spark causes late firing; exhaust gases escape while they are still hot, causing backfire, wates power and fuel, causes exhaust valve temperature to go up, leads to warped valves which loses power and compression.

8. What tools do you need for ignition timing?

a) set of box-end wrenches
b) screw driver
c) piece of chalk
d) spark plug wrench
e) feeler gage
f) clean rag
g) paper
h) timing light

9. What happens if the points are set too close? They will burn and become pitted. What happens if the points are set too wide? You will get a weak spark which will cause bad timing and loss of power.

10. How many times do you re-check the gap when setting the breaker points? As many times as it will take to properly set the correct gap, until the gap is set properly.

11. If the recommended gap for the points is .024 to .026 inch, which gap do you use? You use the widest gap that is recommended to allow for narrowing of the gap due to wear.

12. What is best to use to remove dirt, oil, water, or grease on the points? Smooth paper.

13. What happens to the insulation on the spark plug wires when oil soaks into them? Or if cracks are on wires? The wires may become defective and cause voltage leaks to ground out the voltage, thus causing a weak spark at the spark plugs.

14. Why should the outside of the spark plugs be clean? If dirt, water, or oil collect on them, it may cause the grounding of the high voltage and thus decrease or cut off the voltage to the firing chamber.

15. What could cause badly burned breaker points?

a) Bad condenser or wrong size condenser.
b) Oil, grease, dirt, dust, or water on points.
c) Improper or incorrect size of contact gap; too close.
d) Points are out of alignment.

VESL LESSON PLAN CLASS ESL/Farm Equipment Operation and Maintenance WEEK 14

1) LESSON TOPICS: Ignition System Timing of "Gasoline Engine"

2) BEHAVIORAL OBJECTIVES:

ESL Students will be taught to understand the meaning and be able to pronounce each part, also relating each part to the other parts of the engine.

VOC Students should be able to set the points and time the distributor to the engine.

3) LESSON OUTLINE:

ESL
a) Continue identification of terms
   1. Use illustration and fill in key
   2. Draw parts of ignition system and make all wiring connections to complete continuity
   3. Discuss terminology and meaning

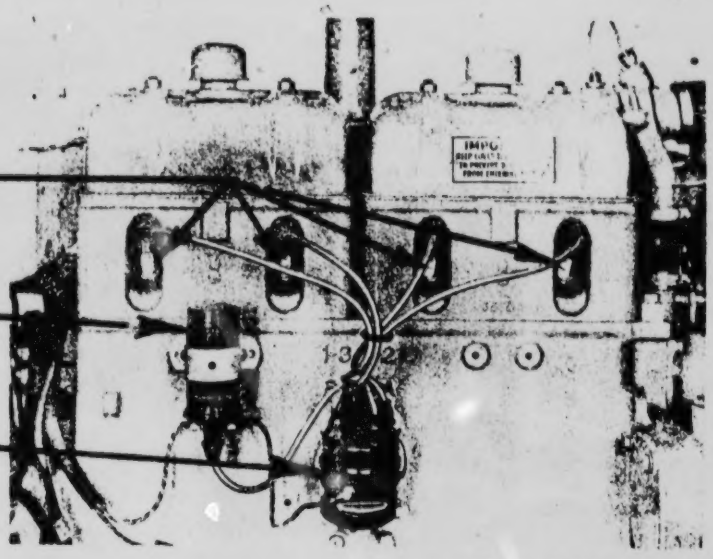
VOC
b) Have students individually adjust points and time the distributor to the engine. (Engine must start and timing be checked with timing light.)

4) NEW VOCABULARY: Polarity, grounding, top dead center, timing, clockwise, counter-clockwise.

5) MATERIALS NEEDED: Handouts, parts and questions and answers.
See Documentation for Handouts on page 168-b

6) LESSON EVALUATION: Students will have a terminology and wiring quiz, timing exercise. Complete gasoline internal combustion engine, timing light, feeler gage, and wrenches will be included in this exercise.

These exercises took a considerable amount of time because of the trial and error that took place in doing a good job and obtaining the skill that is required. This is especially a skill that a student cannot obtain simply by observation, but by plenty of time and doing it over and over. All students need to do more of this exercise to become more fully proficient.



Courtesy J. I. Case Co.

[redacted] tractor ignition system showing the coil, distributor and high tension leads to the spark plugs. Note the firing order on the block just back of the distributor.

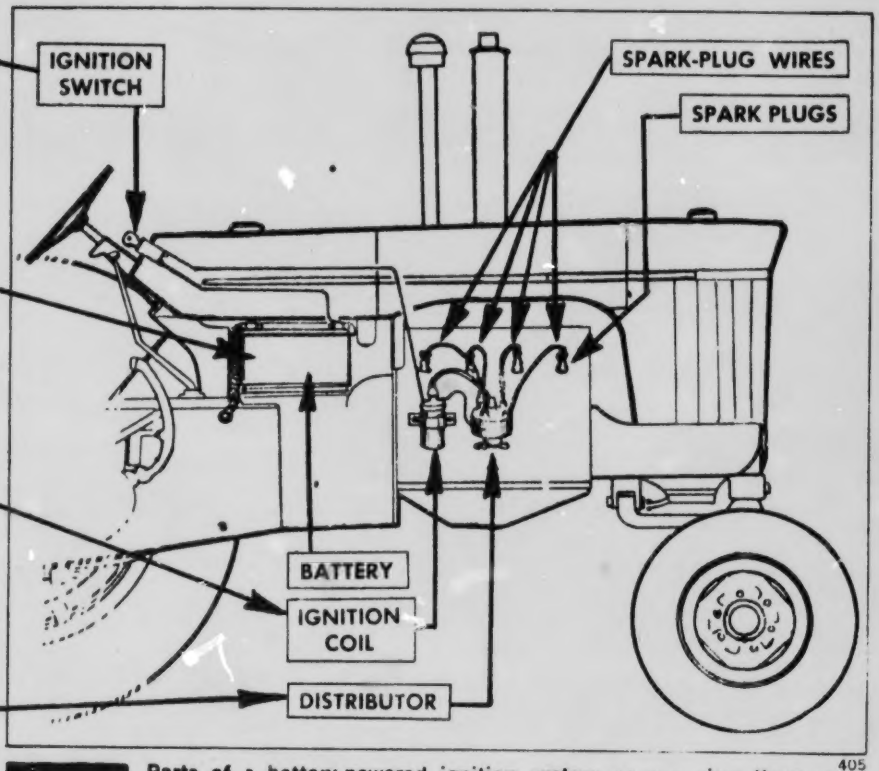
THE SPARK PLUGS IGNITE THE FUEL

THE IGNITION SWITCH STARTS THE ENGINE

THE BATTERY STORES ELECTRICITY

THE COIL PRODUCES HIGH VOLTAGE TO THE SPARK PLUGS

THE DISTRIBUTOR CONTROLS + DIRECTS ELECTRICITY TO SPARK PLUGS



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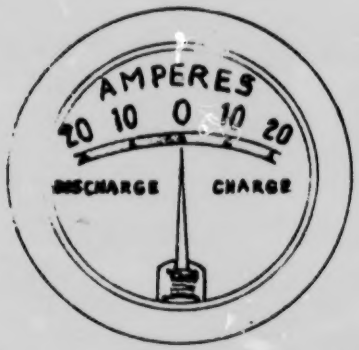
[redacted]. Parts of a battery-powered ignition system as you view them on a tractor.

INSTRUMENT PANEL

THE TEMPERATURE GAUGE MEASURES THE TEMPERATURE OF THE WATER.

[redacted]. Keeping the operating temperature up on your tractor provides more horsepower and greater fuel efficiency.

THE TACHOMETER MEASURES RATE OF ENGINE SPEED.



THE AMMETER MEASURES THE RATE OF BATTERY CHARGE OR DISCHARGE

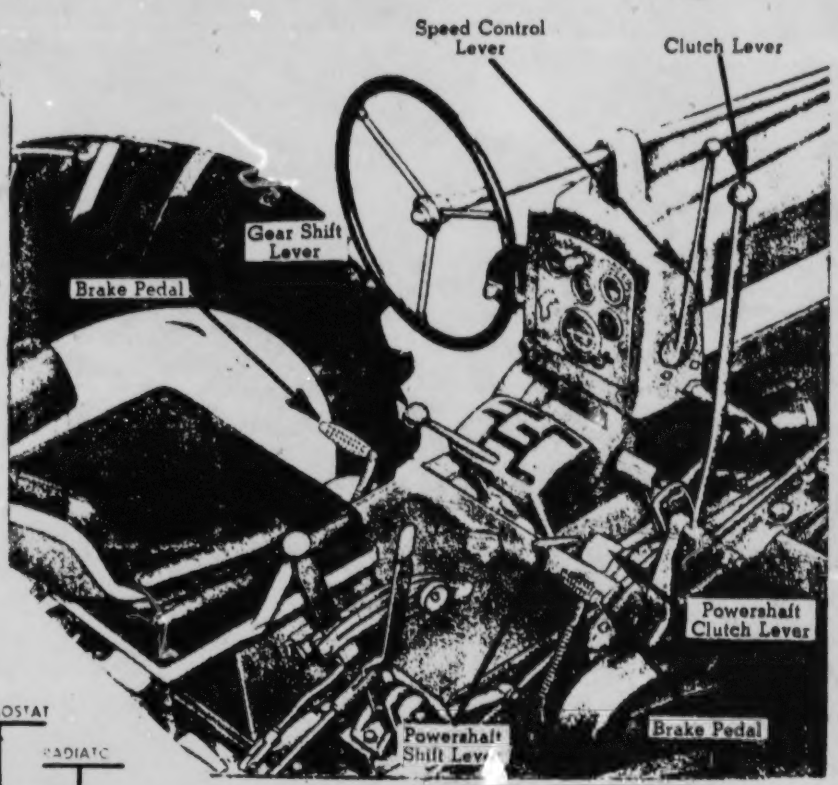
[redacted]. The ammeter shows the rate of battery charge or discharge.

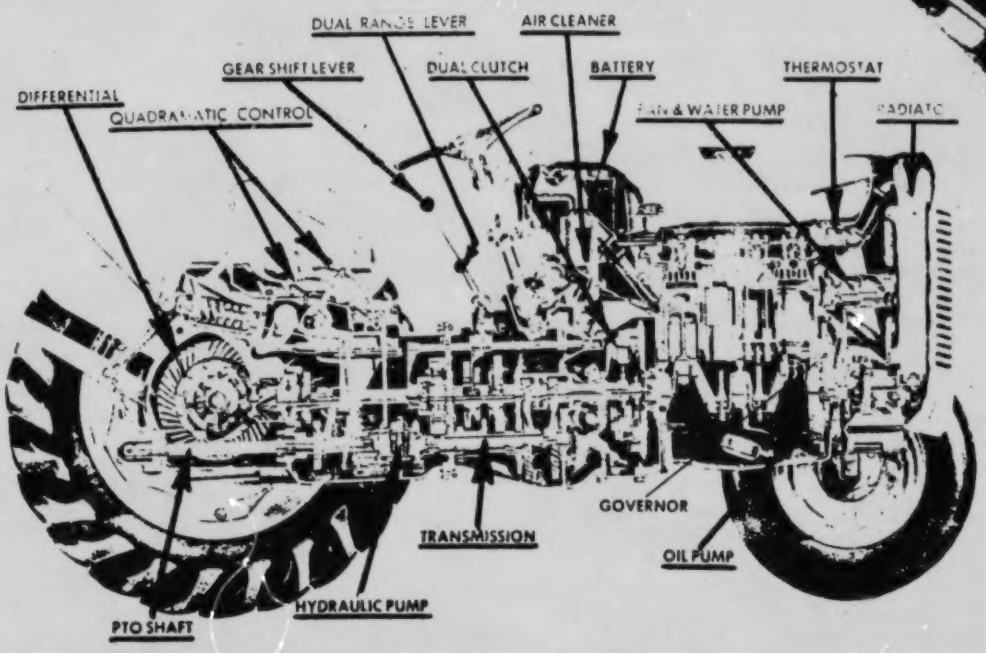
THE OIL PRESSURE GAUGE MEASURES RATE OF OIL PRESSURE.

[redacted] If the oil-pressure indicator suddenly drops to zero, or points to the red area, stop your engine at once.

[redacted]. (a) Tachometer (for indicating engine speed) is often included with a speedometer and hour meter (for showing number of hours engine operates at a standard speed). Combination instruments of this type are known by such names as: "proofmeter," "tractormeter," "speed-hour meter," "operation meter" and "tachourmeter." (b) Instrument panel with speedometer (left) separated from tachometer and hour meter.

THE GEAR SHIFT LEVER CHANGES THE GEARS.
THE CLUTCH LEVER ENGAGES OR DISENGAGES THE POWER SHAFT + TRANSMISSION.
THE BRAKE PEDAL STOPS THE TRACTOR.
THE SPEED CONTROL LEVER CONTROLS THE ENGINE SPEED — R.P.M.
THE AIR CLEANER CLEANS THE AIR.
THE TRANSMISSION TRANSFERS POWER FROM THE ENGINE TO THE WHEELS.
THE DIFFERENTIAL CONNECTS THE TWO REAR AXLES.



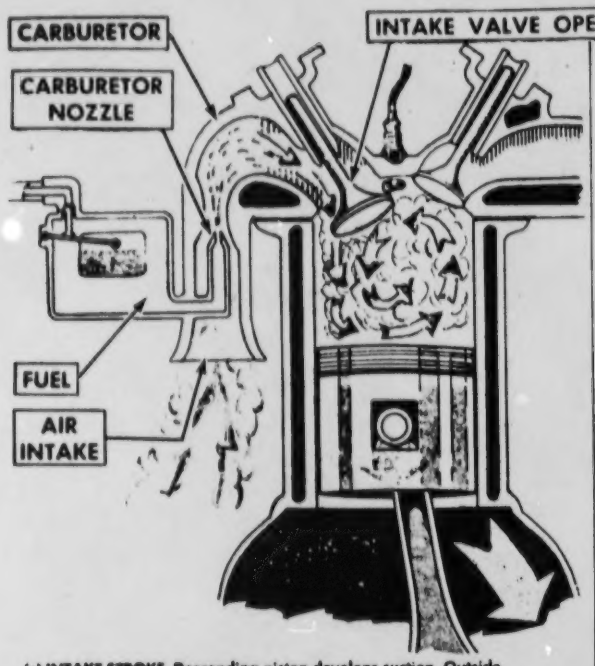


Courtesy Massey-Ferguson

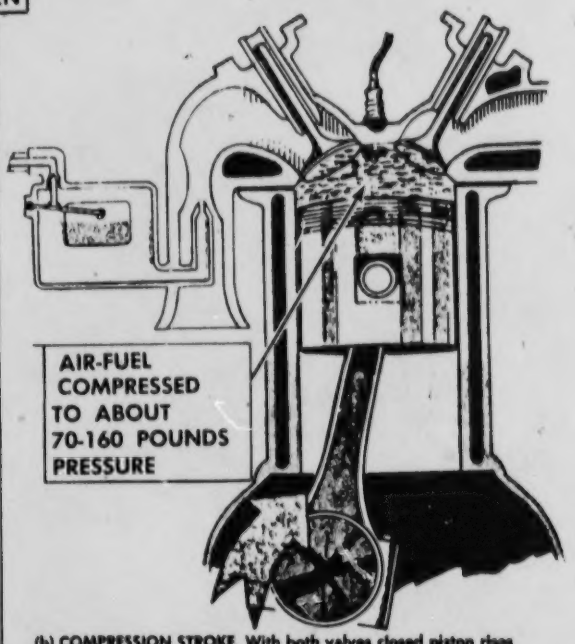
Fig. 1-10 Cutaway view of a modern tractor.

— THE OIL PUMP FORCES OIL THROUGH THE ENGINE.
— THE P.T.O. SHAFT HOOKS UP POWER TO THE IMPLEMENTS.
— THE HYDRAULIC PUMP FORCES OIL THROUGH THE HYDRAULIC SYSTEM.

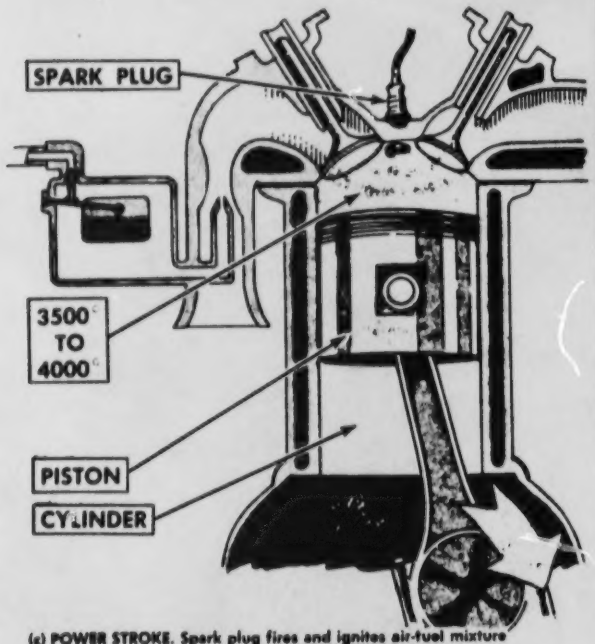
4 STROKE GASOLINE ENGINE



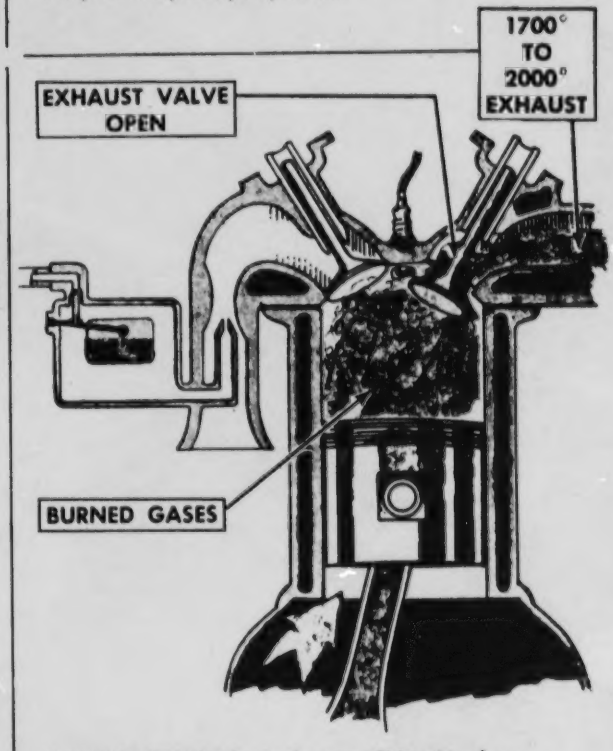
(a) INTAKE STROKE. Descending piston develops suction. Outside air is drawn past carburetor nozzle where it picks up fuel spray. Air and fuel mixture passes through open intake valve into cylinder chamber.



(b) COMPRESSION STROKE. With both valves closed piston rises and compresses trapped air-fuel mixture to pressure of approximately 70 to 160 pounds per square inch.



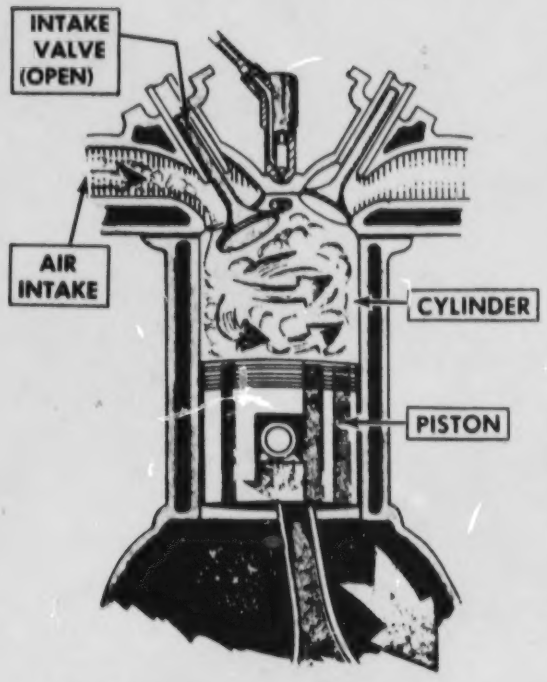
(c) POWER STROKE. Spark plug fires and ignites air-fuel mixture causing combustion. Piston is forced down. Temperature of about 1300 degrees F. is reached inside cylinder.



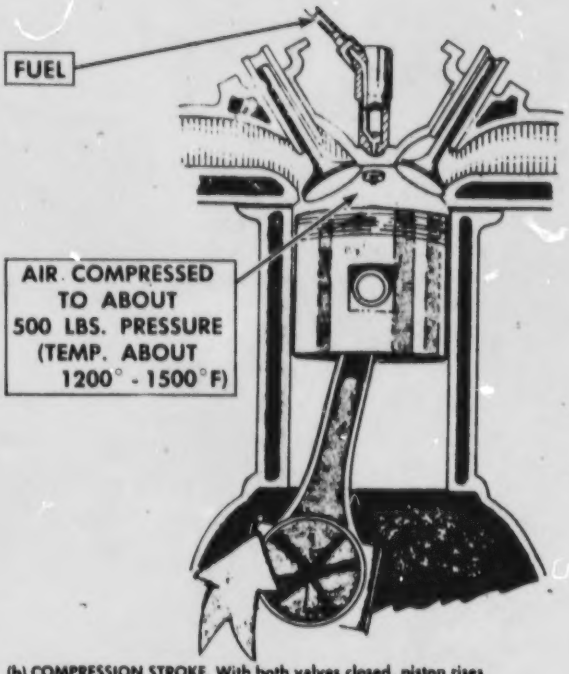
(d) EXHAUST STROKE. Exhaust valve opens. Rising piston forces exhaust gases from cylinder.

Figure 64. How a 4-stroke carburetor engine develops power.

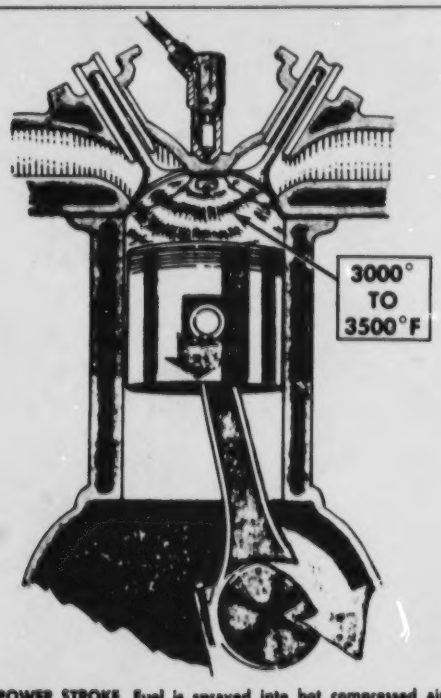
4 STROKE DIESEL ENGINE



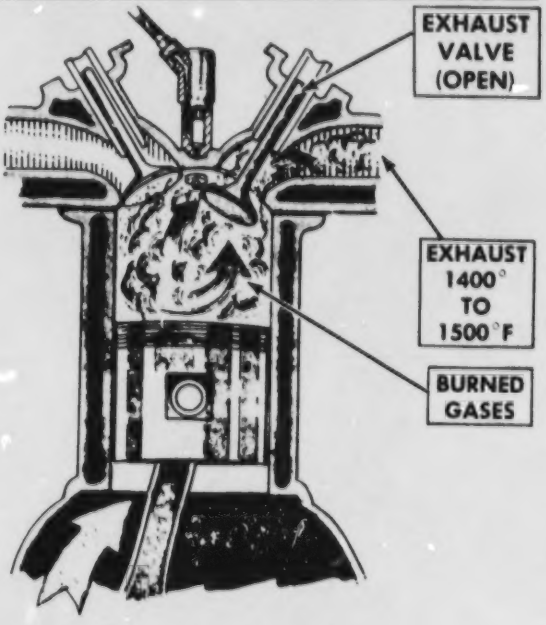
(a) INTAKE STROKE. Descending piston develops suction. Outside air (without fuel) is drawn through open intake valve. Note swirling action.



(b) COMPRESSION STROKE. With both valves closed, piston rises and compresses trapped air to about 500 pounds pressure. This raises air temperature.



(c) POWER STROKE. Fuel is sprayed into hot compressed air. Fuel ignites spontaneously (no plug needed). Piston is forced down.



(d) EXHAUST STROKE. Exhaust valve opens. Rising pistons forces exhaust gases from cylinder.

Figure 65. How a 4-stroke diesel engine develops power.

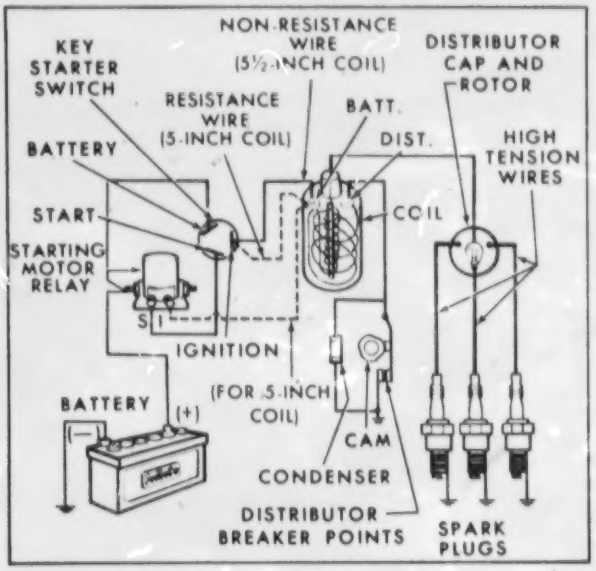


Figure 56
Ignition System Electrical Circuit

The secondary circuit consists of the:

- Secondary windings of the ignition coil
- High tension wires
- Distributor rotor and cap
- Spark plugs

With the key-starter switch in the "start" position and the distributor contact points closed, the current in the primary circuit flows from the battery, through the low tension wires, through the ignition coil primary windings, through the distributor contact points, and back to the battery through ground.

The flow of current through the primary windings creates a strong magnetic field within the ignition coil. When the contact points begin to open, the primary circuit is broken and the low voltage current flows into the condenser. The condenser stops the flow of the primary current suddenly, resulting in a quick collapse of the magnetic field around the coil primary windings. This action induces a high (secondary) voltage in the secondary windings of the coil. The high voltage carries the required current from the coil, through a high tension wire, to the distributor center terminal. From the center terminal, the high voltage is transmitted by the distributor rotor to the correct spark plug wire contact in the distributor cap, to the spark plug high tension wire, and into the spark plug. The current passes through the spark plug and across the spark plug gap where a spark occurs, resulting in the ignition of the fuel-air mixture in the combustion chamber.

The spark timing is regulated by centrifugal and vacuum spark advance mechanisms.

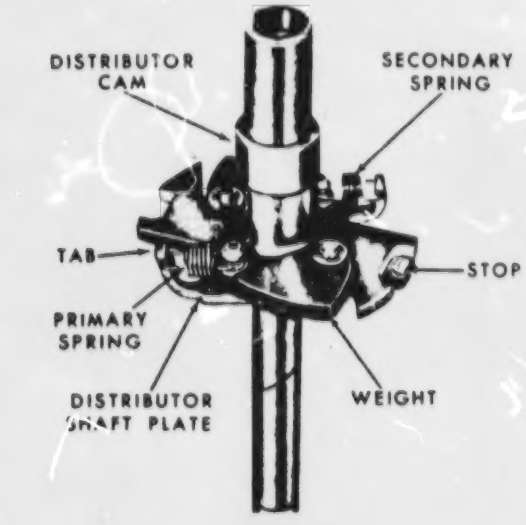


Figure 57
Centrifugal Spark Advance Mechanism

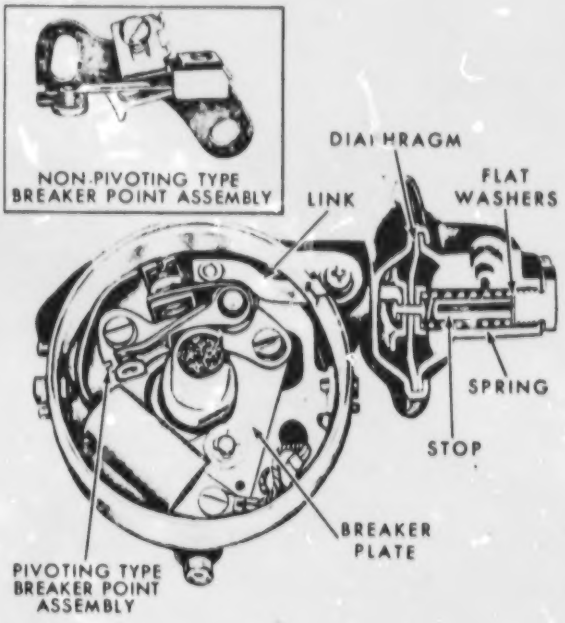


Figure 58
Distributor and Cutaway of Vacuum Spark Advance Mechanism

VESL LESSON PLAN CLASS ESL/Farm Equipment Operation and Maintenance WEEK 15

1) LESSON TOPICS: Ignition System Timing
(Continued due to amount of time required for all students to time ignition due to the complication of the ignition system.)

2) BEHAVIORAL OBJECTIVES:

ESL Students are to understand the meaning of and be able to pronounce and understand purpose for each part in relation to other parts in the ignition system.

VOC Students are to be able to set points and time the distributor of the engine.

3) LESSON OUTLINE:

ESL a) Discuss timing procedure
1. Students copy from outline on board
2. Students perform ignition timing exercise
3. Administer test on ignition system wiring

VOC Same

4) NEW VOCABULARY: Terms relevant to timing exercise: defective wires, voltage, grounding, alignment, timing tools, re-check, proper timing, insulation, advanced & retarded timing, temperature, backfire, ignition, compression, power & exhaust strokes, cylinder, cranking the engine, flywheel, and timing marks.

5) MATERIALS NEEDED:

Engines, timing light, ignition quiz, chalk, chalkboard, feeler gage and handouts.

6) LESSON EVALUATION:

Students completed the outside driving exercises that had been postponed due to rain. The students in all these classes are all most eager to work in the shop and actually perform the task rather than just talking about it. We also realized that this is very important so we have been spending more time in the shop, but at the same time, complimenting the proper English background and expression.

In some cases, the language is not the problem in learning a new concept, but rather a mechanical aptitude and the mechanical ability to understand. We found this to be true when even after a new concept was explained in Spanish, they still had difficulty learning. We then tried a different approach by demonstrating more by using visual aids.

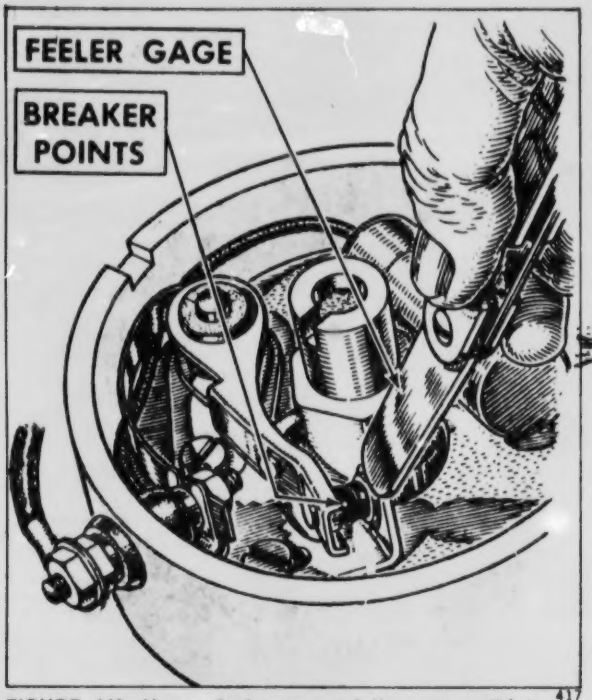


FIGURE 142. Use a feeler gage of the proper thickness when setting point spacing.

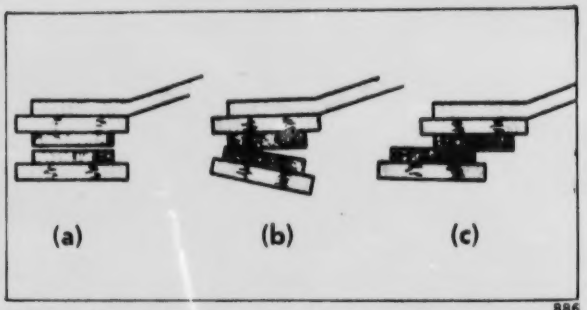


FIGURE 144. (a) Breaker points should fit together squarely to keep down wear. (b) and (c) Only partial contact causes arcing and uneven wear.

ADJUSTING BREAKER POINTS:

1. Turn engine until cam opens points to the widest position.
2. Check points for proper spacing. (142)
3. Loosen lock screw on bracket that provides adjustment. (143)
4. Adjust points for proper spacing and alignment. (143)
5. Lock breaker point in position with lock screw.
6. Recheck gap between points and clean the points with a strip of paper or cloth.

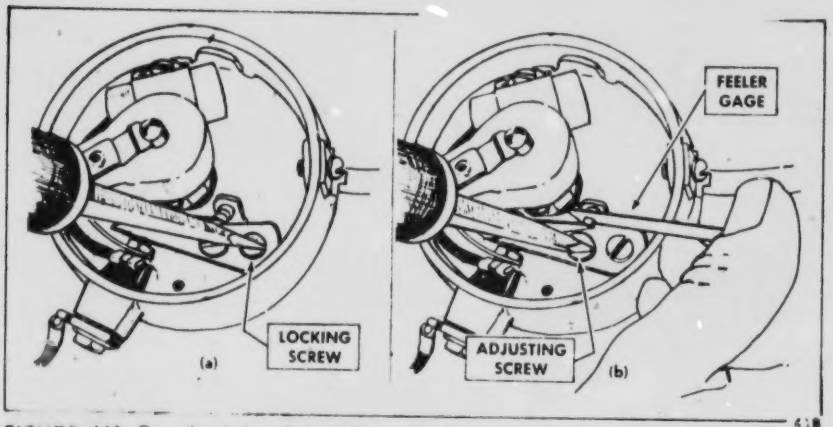
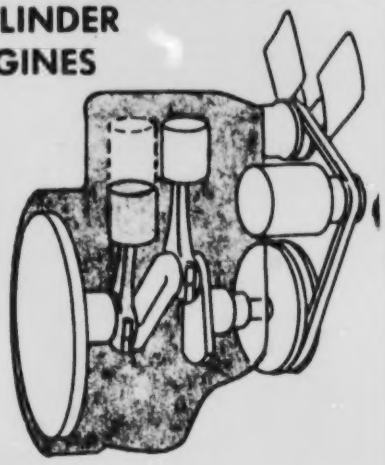


FIGURE 143. To adjust breaker points, (a) loosen lock screw on bracket and (b) adjust points with adjusting screw.

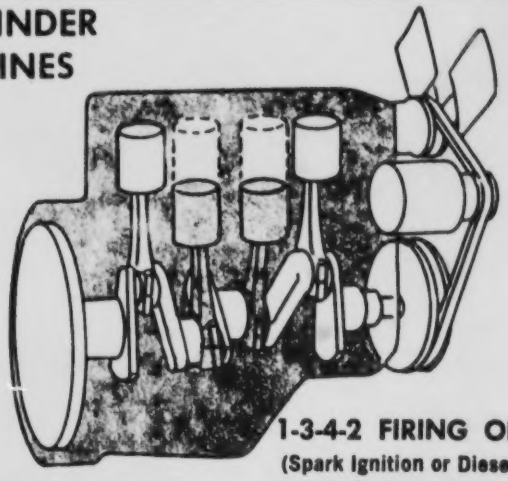
2-CYLINDER ENGINES



1-2 FIRING ORDER
for all spark ignition or diesel engines

(a)

4-CYLINDER ENGINES



1-2-4-3 FIRING ORDER

(Spark Ignition or Diesel)
—Allis Chalmers (except D-15)
—Cockshutt 550
—David Brown
—Ford
—Oliver (except Super 44, 440, 1900, 1900B, and 1900 C

1-3-4-2 FIRING ORDER

(Spark Ignition or Diesel)
—Allis Chalmers D-15
—John Deere
—Case
—Cockshutt (except 550)
—Farmall
—International Harvester
—Massey-Ferguson
—Massey-Harris
—Minneapolis-Moline
—Oliver Super 44, 440, 1900, 1900B, and 1900C

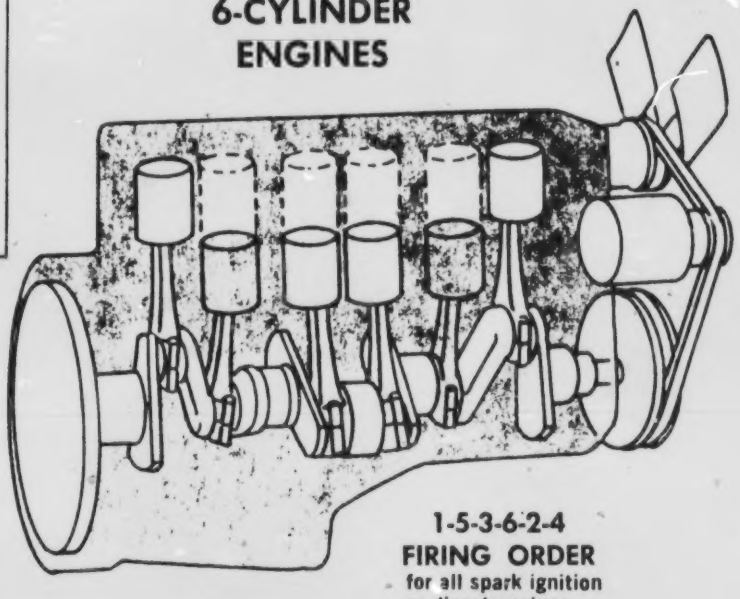
(b)

3-CYLINDER ENGINES
(not shown)

1-2-3 FIRING ORDER
—David Brown
—Fords on Dexta, Super Dexta, and 2000
—John Deere
—Massey-Ferguson

1-3-2 FIRING ORDER
—Oliver Super 99 GM, 990, and 995

6-CYLINDER ENGINES



1-5-3-6-2-4 FIRING ORDER
for all spark ignition or diesel engines

(c)

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FIGURE 69. Piston and crankshaft positions when No. 1 cylinder is on compression stroke and firing order for tractors with: (a) 2 cylinders, (b) 4 cylinders and (c) 6 cylinders. Not shown is a 3-cylinder engine. Note that in 4- and 6-cylinder engines the pistons act in pairs but each cylinder is in a different stage of the cycle and so timed that power is being supplied to the crankshaft in as smooth a flow as possible.

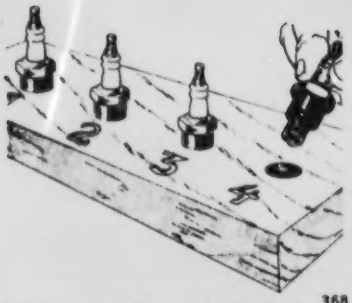

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FIGURE 78. One method of keeping plugs identified with the cylinders from which they were removed.

Remove dirt with an air blast (Figure 77b), small paint brush or cloth to keep it from entering cylinders. If you have an air hose equipped for inflating tires, press the hose connector against the top of the spark plug to trip the air-release valve.

3. *Remove each plug and arrange so each can be identified with its cylinder (Figure 78).*

   By keeping each plug identified with the cylinder from which it was removed, you may be able to detect a cylinder that is using oil or one that is not working properly.

   Be sure to remove gaskets if any remain on the engine. They may still be usable.

CONDITIONING THE PLUGS

CONDITION	IDENTIFICATION	CAUSED BY
OIL FOULING	Wet, sludgy deposits.	Excessive oil entering combustion chamber through worn rings and pistons, excessive clearance between valve guides and stems, or worn or loose bearings.
GAS FOULING	Dry, black, fluffy deposits.	Incomplete combustion caused by too rich an air-fuel mixture or by a defective coil, breaker points or ignition wiring.
BURNED OR OVERHEATING	White, burned, or blistered insulator nose and eroded electrodes.	Engine overheating caused by improper ignition timing, wrong type of fuel, loose spark plugs, too hot a plug, or low fuel pump pressure.
NORMAL CONDITIONS	Rusty brown to grayish-tan powder deposit and minor electrode erosion.	Regular or unleaded gasoline.
HIGH LEAD DEPOSITS	White, powdery deposits.	Highly leaded gasoline (premium gasoline.)
CARBON FOULING	Hard, baked on black carbon.	Too cold a plug. Weak ignition, defective fuel pump, dirty air cleaner, too rich a fuel mixture.
SILICONE DEPOSIT	Hard and scratchy.	Formed when fine sand particles combine with anti-knock compounds in the fuel. Most common in dusty areas. The plugs cannot be cleaned.
SPLASHED FOULING		Deposits, accumulated after a long period of misfiring, suddenly loosened when normal combustion chamber deposits are restored after new plugs are installed. During a high speed run these deposits are thrown into the plug.

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FIGURE 79. Check the condition of your spark plugs. They may reveal other problems.

VESL LESSON PLAN CLASS ESL/Farm Equipment Operation and Maintenance WEEK 16

1) LESSON TOPICS: Ignition Timing (continued); Introduction of Valve Timing and Adjustment

Older engines with solid lifters must ocassionally be adjusted.

2) BEHAVIORAL OBJECTIVES:

ESL Student will be able to understand terms connected with ignition timing and valve timing.

VOC Students will understand valve timing and be able to adjust valves.

3) LESSON OUTLINE:

ESL
a) Discuss terms and have students repeat
b) Explain valve timing
c) Demonstrate valve adjustment procedure:
1. screw driver
2. Half-inch end wrench
3. Feeler Gauge
4. Engine
5. Spark Plug Wrench

VOC
d) Students repeat procedure--each student performs valve adjustment until they are correctly set according to specifications.
e) The other students check the valve settings adjusted by each student, then the teachers or the aide also checks for correctness.

4) NEW VOCABULARY: Push rod, rocker arm, valve, valve spring, valve spring retainer, valve spring keeper, rocker arm, shaft, rocker arm assembly, valve assembly, valve timing, exhaust valve, intake valve, adjusting screw, locknut, valve clearance, rocker arm shaft.

5) MATERIALS NEEDED:

Engines and tools to perform adjustments.

See Documentation for Handouts on page 168-b

6) LESSON EVALUATION: The English identification of parts and functions as the students performed the tasks was the type of learning for best retention. This was due to the association of the parts and functions together while performing. However, we still drilled and reviewed in class, also, for best learning and retention results.

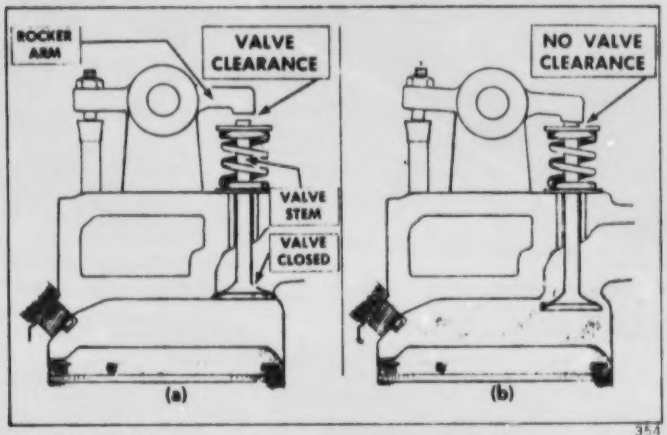

FIGURE 60. (a) Proper valve clearance allows valve to seat and seal gases in cylinder. (b) Too little clearance keeps valve from seating. Valve overheats and power is lost.

IMPORTANCE OF PROPER VALVE ADJUSTMENT AND CLEARANCE:

1. Valves last longer.
2. The engine uses less fuel.
3. The engine starts easier.
4. The engine produces more power.
5. The engine is less likely to overheat.
6. The engine runs smoother.

TOOLS AND MATERIALS NEEDED

1. Set of box end wrenches
2. Set of open end wrenches
3. Spark-plug wrench
4. Leaf thickness gage
5. Torque wrench and socket set
6. Screwdriver
7. Clean rags
8. Bucket of cleaning solvent (kerosene or diesel fuel)
9. Container for nuts and cap screws

PREPARING TRACTOR FOR VALVE ADJUSTMENT

(Spark-ignition or diesel tractors)

The procedures that follow are for valve-in-head engines since most farm tractors have that type of

FIGURE 61. Some of the tools needed for adjusting tractor valve clearances.

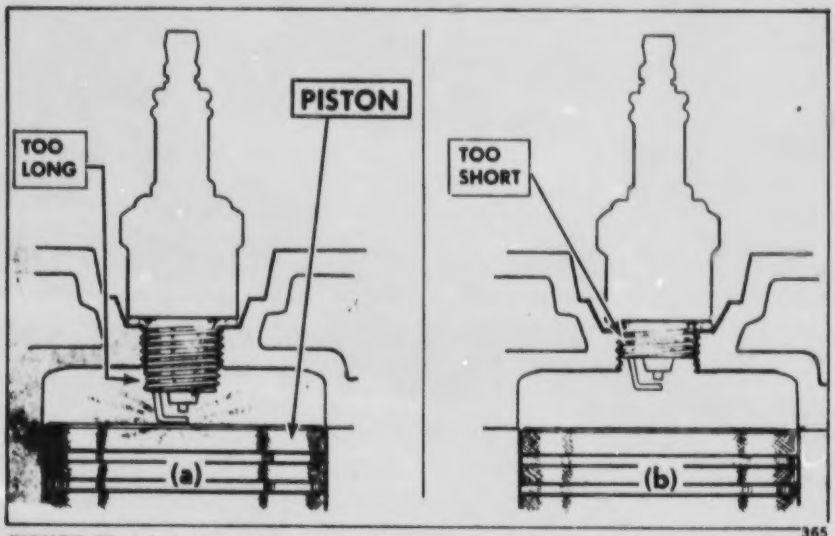

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FIGURE 75. (a) A plug with too much reach may interfere with piston and valve action. The exposed threads will collect deposits and the plug will be hard to remove. (b) A plug with too little reach will not extend into the cylinder far enough for proper combustion.

TOOLS AND MATERIALS NEEDED

1. Spark-plug wrench
2. Wire feeler gage
3. Ignition (distributor point) file
4. Pen knife
5. Wire brush
6. Small paint brush
7. Pan of cleaning solvent
8. Torque wrench (if available)
9. Sand-blast machine (if available)

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FIGURE 77. (a) Hold socket wrench straight while loosening plugs. (b) Remove dirt from around plugs before they are completely removed.

REMOVING PLUGS FROM ENGINE

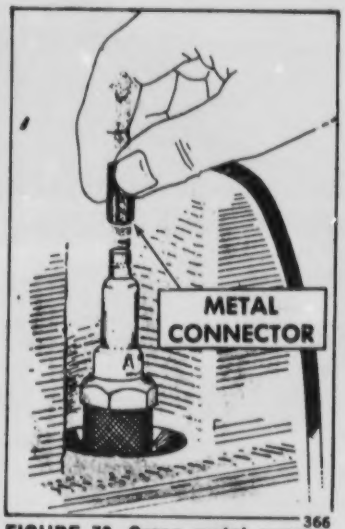

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FIGURE 76. Grasp metal connectors rather than wire insulation when removing spark-plug wires. This helps prevent loosening the connectors from the wire ends.

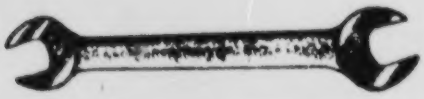
Name_____

Midterm

Date_____

ESL/Farm Equipment Operation and Maintenance

I. Please identify the following tools (10 points):

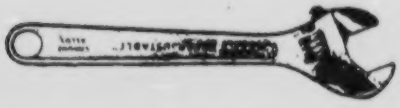


1. _____

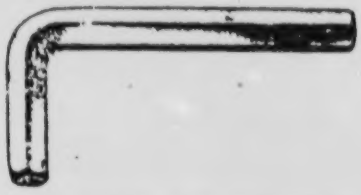
2. _____

3. _____

4. _____

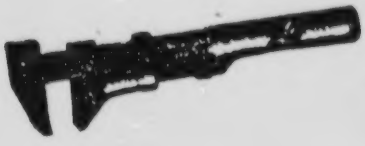


5. _____

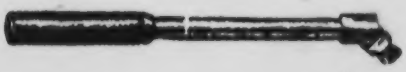


6. _____

7. _____



8. _____



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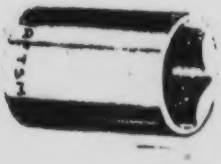


10. _____

II. Tractor Parts and Functions - Fill in the blanks: (10 points)

1. The _____ _____ _____ changes the gears.
2. The _____ _____ engages or disengages the power shaft and transmission.
3. The _____ _____ stops the tractor.
4. The _____ _____ _____ controls the engine speed.
5. The _____ _____ cleans the air.
6. The _____ transfers power from the engine to the wheels.
7. The _____ connects the two rear axles.
8. The _____ _____ forces oil through the engine.
9. The _____ _____ hooks up power to the implements.
10. The _____ _____ forces oil through the hydraulic system.

Choices:

oil pump

hydraulic pump

differential

brake pedal

gear shift lever

air cleaner

speed control lever or throttle

P.T.O Shaft

clutch lever or pedal

transmission

III. Tractor Parts and Definitions - Fill in the blanks: (10 points)

Choices:

1. _____ _____ _____: A device or apparatus that forces the hydraulic oil in the power steering system.

2. _____ _____: A machine that changes mechanical energy into electrical energy.

3. _____ _____ _____: The mechanism that forces high pressure to the fuel (1600 to 3200 pounds per square inch) through tubes to each cylinder in a diesel engine.

4. _____: A container that stores electrical energy that is used to start the engine.

5. _____ _____: The device which sprays fuel into hot compressed air in a diesel engine.

6. _____: Gears that connect two axles that turn the wheels. It makes one axle turn faster or slower than the other, when turning around a curve.

7. _____ _____: A device or apparatus that forces the water or coolant in an engine around and circulates the water between the engine and the radiator.

8. _____ _____ _____: The bar device to turn on or off the power to the implements attached to the tractor.

9. _____ _____: A heavy swivel lever attached at the rear of a tractor or other vehicles. It is used for hitching and pulling implements, other vehicles, or for towing heavy loads.

10. _____ _____: The two lower hitch bars which pull an implement, and raise and lower it.

fuel injector

differential

water pump

lower links

battery

power steering pump

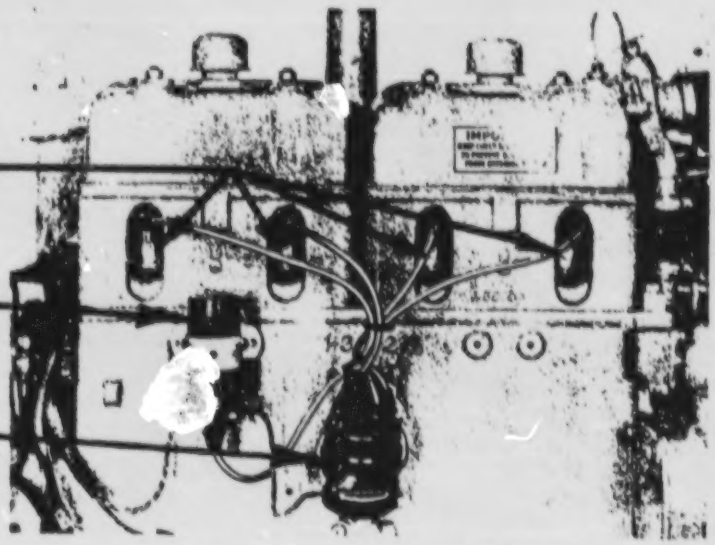
generator

power take-off pump

fuel injection pump

draw bar

IV. THE IGNITION SYSTEM (10 Points)

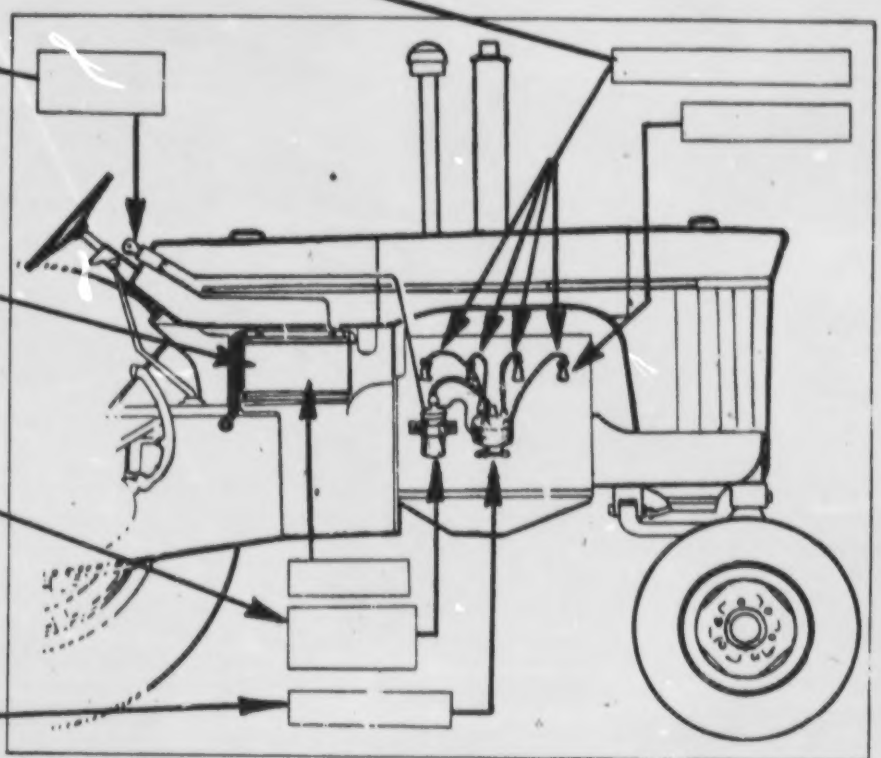


1. _____
2. _____
3. _____

Courtesy J. I. Case Co.

_____ tractor ignition system showing the coil, distributor and high tension leads to the spark plugs. Note the firing order on the block just back of the distributor.

4. +
5. THE _____ _____ IGNITE THE FUEL.
6. THE _____
7. _____ STARTS THE ENGINE
8. THE _____ STORES ELECTRICITY
9. THE _____ PRODUCES HIGH VOLTAGE TO THE SPARK PLUGS
10. THE _____ CONTROLS + DIRECTS ELECTRICITY TO SPARK PLUGS



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_____. Parts of a battery-powered ignition system as you view them on a tractor.

See Documentation for Handouts on page 168-b.

V.

HOW THE COOLING SYSTEM WORKS

(10 Points)

(1) THE _____ COOLS THE WATER.

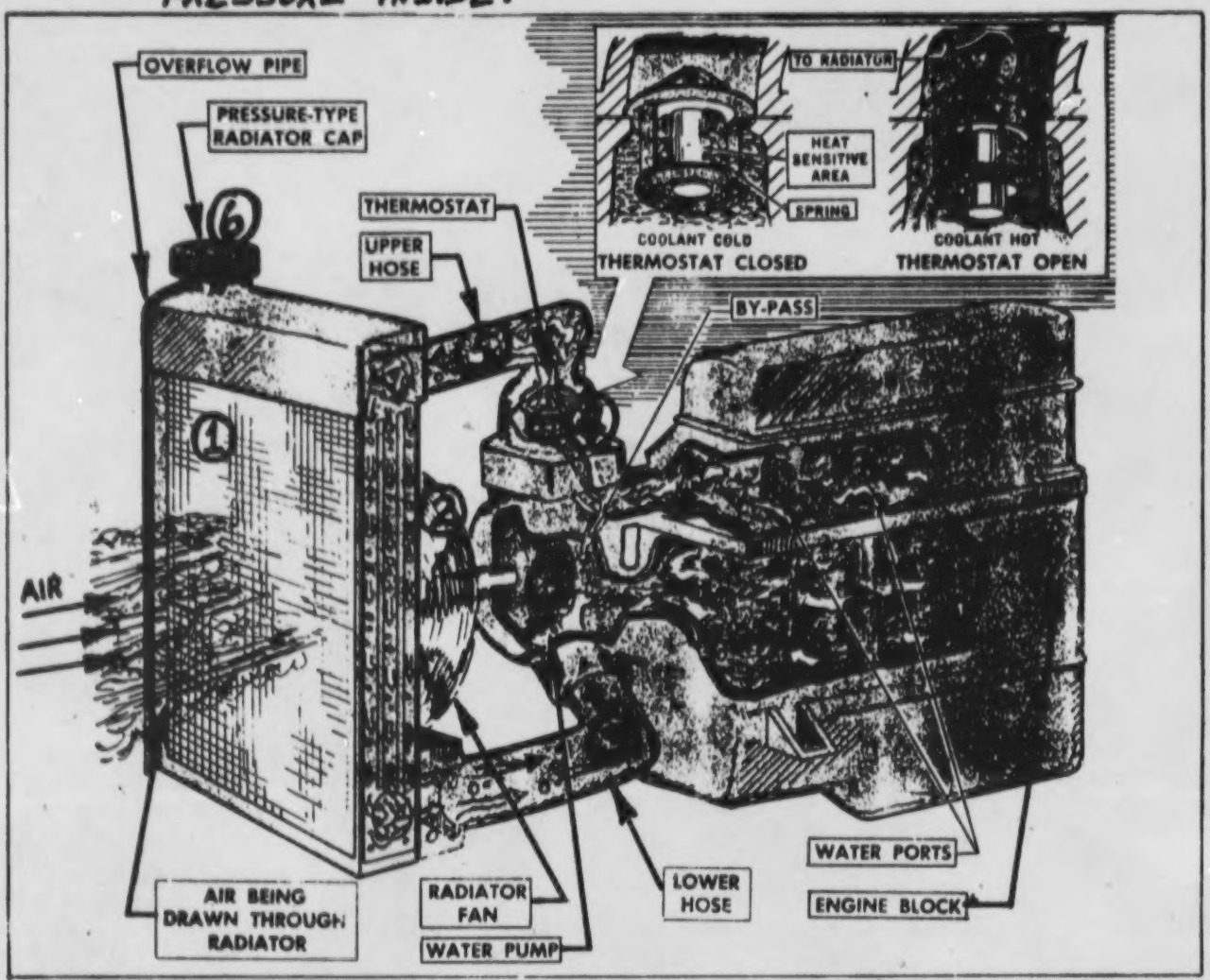
(2) THE ____ PULLS THE AIR THROUGH THE RADIATOR.

(3) THE _____ _____ FORCES WATER THROUGH THE ENGINE.

(4) THE _____ CONTROLS THE WATER TEMPERATURE.

(5) THE _____ CARRY THE WATER AROUND.

(6) THE _____ _____ KEEPS THE WATER AND THE PRESSURE INSIDE.



[redacted] Engine cooling system. Pump pushes heated coolant from inside engine block, past thermostat to the upper part of radiator, then down through the radiator tubes. The fan, on opposite end of shaft from pump, pulls air through the radiator tubes to help speed cooling. The coolant is then forced through the lower hose and pump back into the engine water jacket. (Inset) When the engine is cold the thermostat closes and blocks circulation until the coolant temperature reaches about 160°

See Documentation for Handouts on page 168-b

MID-TERM KEY

ESL/Farm Equipment Operation and Maintenance

I 1. Open End Wrench 2. Combination Wrench 3. Wire Cutters or Diagonal Cutter Pliers 4. Box End Wrench 5. Crescent Wrench 6. Allen Wrench 7. File 8. Monkey Wrench 9. Breaker Bar 10. Socket

II 1. Gear Shift Lever 2. Clutch Lever or Pedal 3. Brake Pedal 4. Speed Control Lever 5. Air Cleaner 6. Transmission 7. Differential 8. Oil Pump 9. Breaker Bar 10. Socket

III 1. Power Steering Pump 2. Generator 3. Fuel Injection Pump 4. Battery 5. Fuel Injector 6. Differential 7. Water Pump 8. Power Take-Off Lever 9. Draw Bar 10. Lower Links

IV 1. Spark Plugs 2. Coil 3. Distributor 4. Spark Plugs 5. Ingition 6. Key 7. Battery 8. Coil 9. Distributor

V 1. Radiator 2. Fan 3. Water Pump 4. Thermostat 5. Hoses 6. Radiator

Student Evaluation of Class
Farm Equipment Operation and Maintanence

This evaluation was given mid-term. As shown below, the number to the right of the response is the number of students who gave that particular response.

1.) Are you learning enoug. English to prepare you for the job you want?

a) Yes (10)
b) No (1)

2.) How can the class be improved for your learning English?

a) Need to write and speak more with instructor (6)
b) It's "okay" as it is (3)
c) Need books in English (1)

3.) Are you learning your vocational skills well enough for the job you want?

a) Yes (10)
b) No (1)

4.) How could this class be improved to help you learn your vocational skills?

a) More work in the shop with explanation (5)
b) Need books (3)
c) Need more Spanish explanations then in English (2)

5.) With what do you need more help in this class?

a) Books and technical information in mechanics (6)
b) English and shop instruction (2)
c) With every thing (1)
d) With Spanish skills as well as English (1)

6.) Is this class informative?

a) Yes (10)
b) no (1)
c) Doubtful (1)

7.) Is this class interesting?

a) Yes (11)

8.) How could this class be improved?

a) Shop practice and active practice (6)
b) Explain in Spanish then in English (2)
c) "Okay" as it is (2)
d) Classes three days a week (1)

9.) What do you like most about the class?

a) Shop mechanics (10)
b) When engine parts are shown (1)

10.) What do you like least about the class?

a) Nothing (7)
b) Not understanding enough of the English in lecture (2)
c) Not enough shop practice in the shop (1)
d) That groups are not taken out to the shop and lectured there (1)

11.) What particular job would you like to get after this program ends?

a) Mechanic's aid (4)
b) Tractor operator (4)
c) A job with regular pay and a oportunity to still learn (1)
d) Gas station job (1)
e) Not sure (1)

English

Evaluation of ESL/Vocational Class

by Students

Class Title_____ Date_____19___

Student's Name_____ Week #_____

* * *

1. Are you learning enough English to prepare you for the job you want?_____
2. How can the class be improved for your learning English?_____

_____.

3. Are you learning enough of the right vocational skills to prepare you for the job that you want?_____.
4. How can the class be improved for your learning the vocational skills?_____.

_____

5. What do you need more help with in class?_____

_____.

6. Would you describe the class as informative or uninformative?_____.
7. Would you describe the class as interesting or uninteresting?_____.
8. How else can the class be made to help you learn?_____

_____.

9. What do you like most about the class?_____

_____.

10. What do you like least about the class?_____

_____.

11. What particular job would you like to get after this program ends?_____

_____.

12. Toward the end of this program, we may be able to place you into on-the-job training and/or into permanent employment. (This will depend largely upon your skills.) To help us plan your job placement, please list the towns where you would be willing to travel to work:_____

_____.

Thank you!

Spanish

Evaluacion de la Clase ESL/VOCACIONAL

Hecho por Estudiantes

Nombre de Clase_____ Fecha_____19_____

Nombre de Estudiante_____ Semana Numero_____

* * * * * * * * * * * * * * *

1. Esta usted aprendiendo suficiente ingles para prepararle para el trabajo que usted quiere? _____
2. Como puede ser mejor la clase aprender ingles? _____

   _____
3. Ha aprendido suficiente las habilidades vocacaionales para prepararse para el trabajo que usted desea? _____
4. Como puede ser mejorado la clase para su aprendimiento de las detrezas vocacionales? _____
5. Con que necesita mas ayuda en la clase? _____

   _____
6. Está la clase informativa o no? _____
7. Está la clase interesante o no? _____
8. Como puede ser la clase mejor para ayudarle aprender? _____

   _____
9. Que es la mejor parte de la clase? _____

   _____
10. Que es lo que menos le gusta de la clase? _____

    _____
11. Que trabajo prefereria agarrar usted cuando se termine este programa? _____

    _____
12. Para el fin de este programa, tal vez podremos poner a usted en un trabajo donde usted puede seguir aprendiendo y/o en un trabajo permanente. (Este dependerá en sus habilidades) Para ayudarnos a planear su lugar de trabajo, por favor aliste los pueblos donde pueda viajar a trabajar: _____

    _____

 Gracias por su ayuda!

Evaluation, ESL/Vocational Class
by Arabic Speakers

صفوف التدريب المهني
من قبل الطلاب

عنوان الصف _____ التاريخ _____ اسم الطالب الكامل _____

_____ عدد أسابيع الدوام _____

* * *

١ - هل أنك تتعلم كفاية من اللغة الانكليزية تهيئك للحصول على عمل تريده؟ _____

٢ - كيف يمكنه تحسين الصف ليعلمك الانكليزية ؟ _____

_____

٣ - هل أنك تتلقه الكفاية من الخبرة الفنية لتهيئك للعمل ؟ _____

٤ - كيف يمكنه تحسين الصف ليعلمك خبرة فنية ؟ _____

_____

٥ - ما هي المساعدات الاخرى التي تحتاجها في الصف؟ _____

_____

٦ - هل يحضر المعلومة في الوقت المعين لكل صف؟ _____

٧ - هل المعلومة عادة يُحضرون دروسهم لكل صف؟ _____

٨ - هل الصف غني بمواد تدريسه أم لا؟ _____

٩ - هل الصف مستلذ أم غير مستلذ؟ _____

١٠ - ما هي الطريقة الأخرى التي يمكنه تسيير الصف بها ليساعدك على التعلم؟ _____

_____

١١ - ماذا تحب أكثر حول موضوع الصف؟ _____

١٢ - ماذا تحب اقل حول موضوع الصف؟ _____

١٣ - ما هو العمل الذي تود الحصول عليه بعد نهاية هذا البرنامج؟ _____

_____

بمعرفت التدريب المهني
من قبل الطلاب

عنوان الصف _____ التاريخ _____ اسم الطالب الكامل _____

_____ عدد أسابيع التدريب _____

★ ★ ★

١ - هل أنك تتعلم كفاية من اللغة الانكليزية تهيئك للحصول على عمل تريده؟ _____

٢ - كيف يمكنه تحسين الصف ليعلمك الانكليزية ؟ _____

_____

٣ - هل أنك تتلقى الكفاية من الخبرة الفنية فيه لتهيئك للعمل ؟ _____

٤ - كيف يمكنه تحسين الصف ليعلمك خبرة فنية ؟ _____

_____

٥ - ما هي المساعدات الاخرى التي تحتاجها في الصف؟ _____

_____

٦ - هل يحضر المعلمون في الوقت المعين لكل صف؟ _____

٧ - هل المعلمون عادة يُحضرون دروسهم لكل صف؟ _____

٨ - هل الصف غني بمواد تدريسية أم لا؟ _____

٩ - هل الصف مستلذ أم غير مستلذ؟ _____

١٠ - ما هي الطريقة الاخرى التي يمكنه تسيير الصف بها ليساعدك على التعلم؟ _____

_____

١١ - ماذا تحب أكثر حول موضوع الصف؟ _____

١٢ - ماذا تحب اقل حول موضوع الصف؟ _____

١٣ - ما هو العمل الذي تود الحصول عليه بعد نهاية هذا البرنامج؟ _____

_____

VESL LESSON PLAN CLASS ESL/Farm Equipment Operation and Maintenance WEEK 17

1) LESSON TOPICS: Preventative Maintenance

2) BEHAVIORAL OBJECTIVES:

ESL Students will be able to pronounce and know usage and meaning of words related to preventative maintenance.

VOC Students will become familiar with meaning of preventative maintenance and be familiar with types of air cleaners and preventative maintenance procedures.

3) LESSON OUTLINE:

ESL a) Introduction to preventative maintenance
1. John Deere filmstrip
(students repeat terms and phrases)
2. Discuss related terms
a. flash cards
b. students' note

VOC b) Practical application: continue valve timing and adjustment and ignition timing.

4) NEW VOCABULARY: Friction, lubricant, chemical, water boiling point, defective, ignition knock, overload, heavy duty oil, oil viscosity, excessive wear and tear, prevention, preventative maintenance, flush, filter, operator's manual, warp rotation, drain, efficiency, sludge, acids, rust, overheat.

5) MATERIALS NEEDED:

John Deere filmstrip series.

6) LESSON EVALUATION: The use of flash cards proved to be effective. The ESL instructor drilled the students considerably during the second half of the class. Also, the flash cards were passed around to all students and they drilled each other with the cards. This also was an enjoyable way to learn because it was like a game and fun-like.

The filmstrip had a cassette tape, but we did not use it because it was too technical in nature and it was not appropriate for an ESL class, so the instructors working together explained the filmstrip and drilled certain terminology as needed.

VESL LESSON PLAN CLASS ESL/Farm Equipment Operation and Maintenance WEEK 18

1) LESSON TOPICS: The Importance of Preventive Maintenance

2) BEHAVIORAL OBJECTIVES:

ESL Students will become familiar with terminology related to preventive maintenance principles.

VOC Students will be able to perform preventive maintenance (P.M.) measures and recognize systems involved.

3) LESSON OUTLINE:

ESL
a) Discuss importance of:
1. Keeping records
2. Observing service intervals
3. Proper Operation
4. Safety

VOC
b) Engine intake and exhaust systems
(Identify and discuss related P.M.):
1. Air cleaners
2. Turbo chargers
3. Intake and exhaust valves
(Have students perform valve timing and adjusting procedures.)
4. Exhaust manifolds and mufflers
5. Crankcase ventilation

c) Engine fuel systems
(Identify and discuss related P.M.)
1. Selecting fuels
2. Refueling
3. Gasoline & diesel
4. Engine governors

4) NEW VOCABULARY: None listed

5) MATERIALS NEEDED: John Deere Film FMO, tractor engine.

6) LESSON EVALUATION: None given

VESL LESSON PLAN CLASS ESL/Farm Equipment Operation and Maintenance WEEK 19

1) LESSON TOPICS: Engine Lubricating Systems

2) BEHAVIORAL OBJECTIVES:

ESL Students must become familiar with terminology related to engine lubrication systems.

VOC Students will be able to perform P.M. (Preventive Maintenance) measures and recognize systems involved.

3) LESSON OUTLINE:

ESL / VOC

a) Engine Oils
   1. What they must do
   2. Changing crankcase oil.
   3. Preventing contamination
b) Operation of lubrication system
   1. Types of systems
   2. Oil pump
   3. Filters
   4. Coolers
c) Selecting Engine Oils
   1. SAE viscosity
   2. API service designations
d) Servicing the lubrication system
   1. Checking oil level
   2. Changing oil and filter

4) NEW VOCABULARY:

5) MATERIALS NEEDED: John Deere FMO, tractor

6) LESSON EVALUATION:

VESL LESSON PLAN CLASS ESL/Farm Equipment Operation and Maintenance WEEK # 20 & 21

1) LESSON TOPICS:

ESL

Preventive Maintenance and Safety

VOC

2) BEHAVIORAL OBJECTIVES:

ESL Be able to state meanings of words related to the maintenance of the electrical system. Identify and state the purpose of electrical system parts.

VOC a) Be able to perform certain maintenance checks on battery.
b) Be able to properly connect and disconnect battery charger.
c) Be familiar with parts of spark plug and difference between hot and cold plug.
d) Be able to properly remove and install, clean, and check gap of spark plug.
e) Be able to check polarity of spark.
f) Be able to check ignition points for alignment.
g) Be able to clean contact surfaces.
h) Be able to lubricate and check generator belt for proper tension.

3) LESSON OUTLINE: (TEACHING METHODS, STUDENT ACTIVITIES, EVALUATION INSTRUMENTS)

ESL a) Review students' language weaknesses associated with Weeks 14-19.
b) Concentrate on teaching maintenance system vocabulary, as well as the related definitions and parts functions. Use teaching techniques and activities field tested with and preferred by students in particular class. Finally, ask students to identify and explain purposes of the electrical system parts. Students can point to parts in pictures.

VOC a) Cover weaknesses in procedures taught since Week 14.
b) Show studnets how to perform the maintenance checks on the following electrical system parts:

1. Fluid Level
2. Removal, Cleaning, Installation of Battery Clamp.
3. Battery Cleaning
4. Specific Gravity

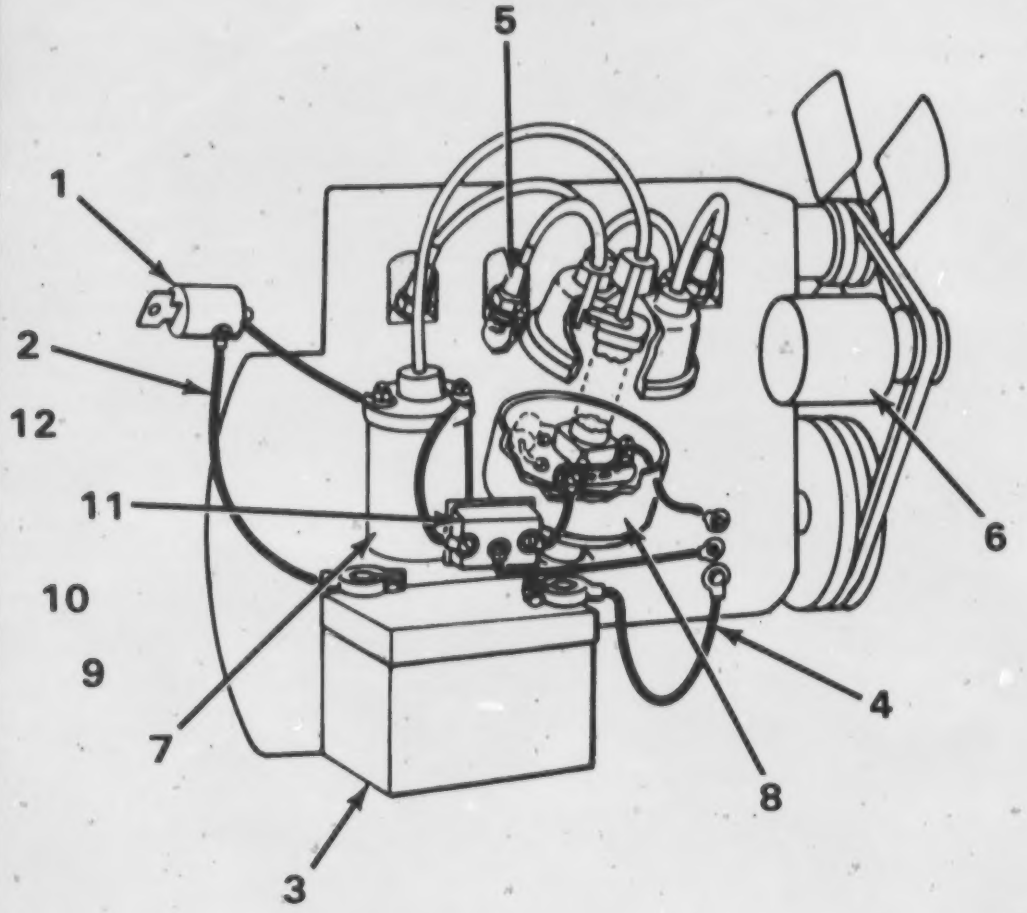
Give each student an opportunity to perform the maintenance checks. Have other students observe each other and point out mistakes and the checks overlooked.

4) NEW VOCABULARY: Battery, fluid level, specific gravity, preventive maintenance, hot and cold plug, hydrometer, solvent.

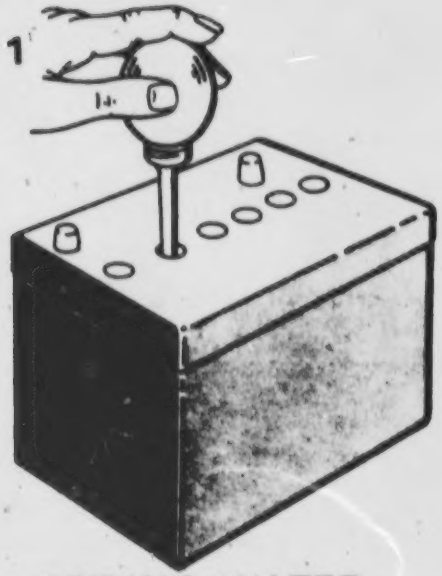
5) MATERIALS NEEDED: Tractor with dirty battery, battery carrier, distilled water and syringe, wire brush, emery cloth, baking soda and water solution, wrench and screw driver, hydrometer, battery charger, spark gap feeler, spark plug file and solvent.
See Documentation for Handouts on page 168-b

6) LESSON EVALUATION:

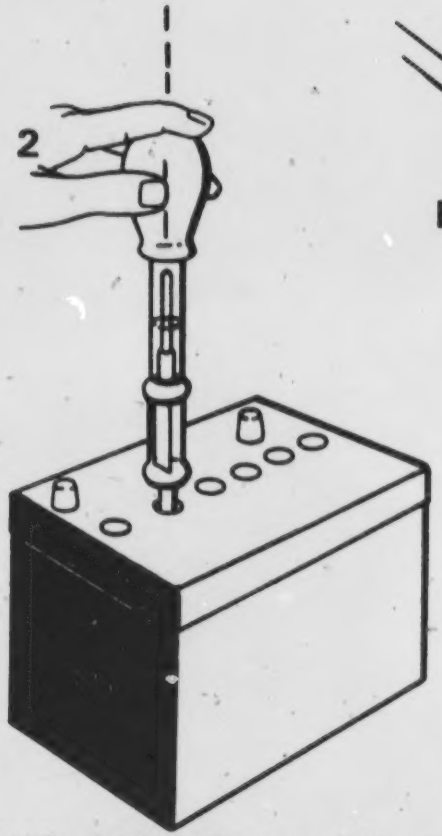
CAN YOU NAME PARTS OF ELECTRICAL SYSTEM?



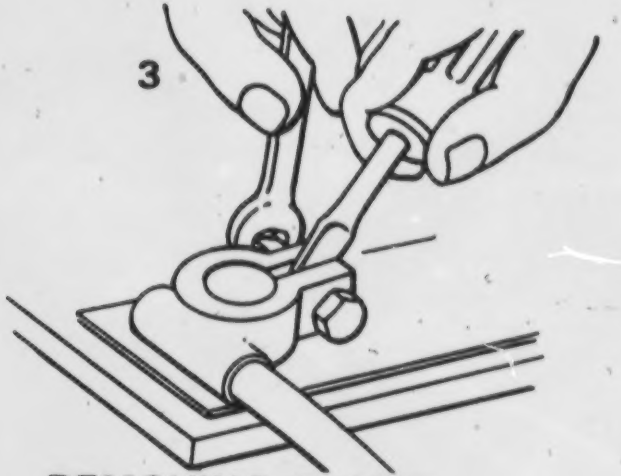
BATTERY MAINTENANCE SKILLS



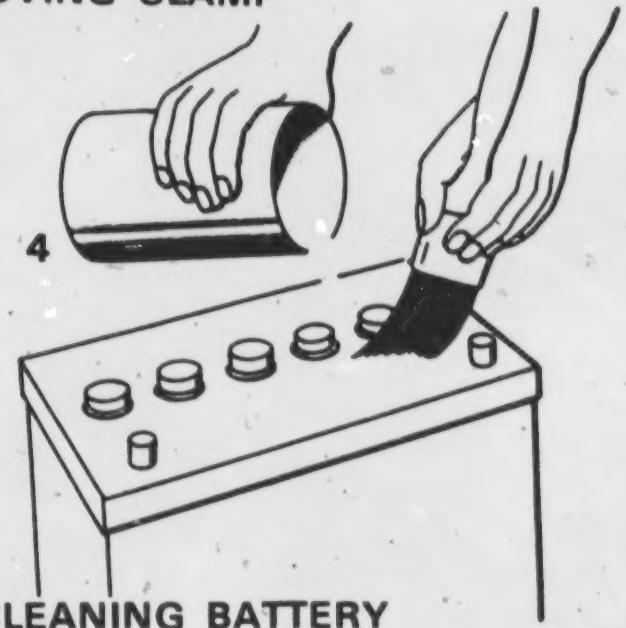
ADDING WATER



CHECKING SPECIFIC GRAVITY

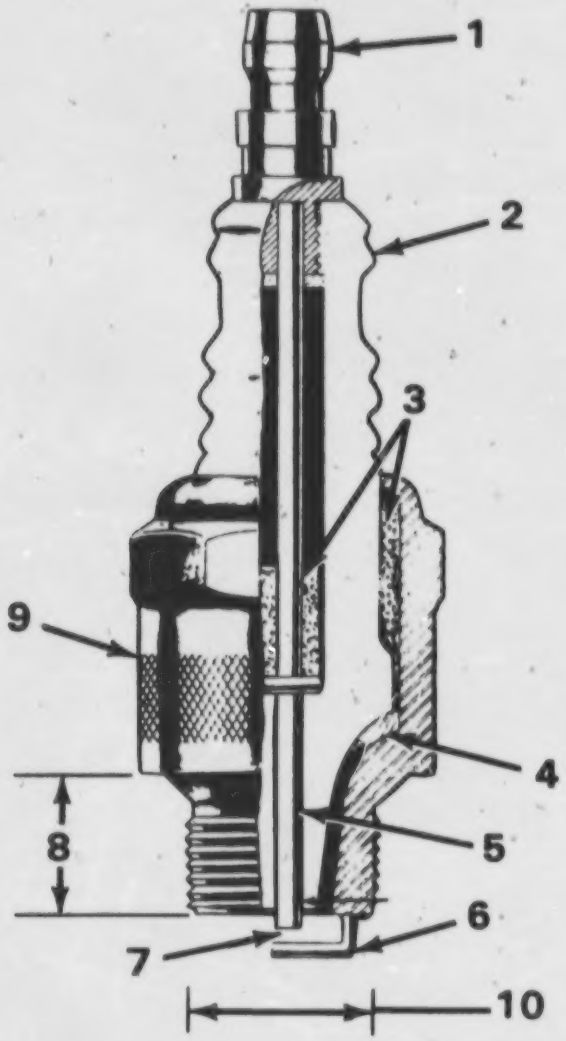


REMOVING CLAMP

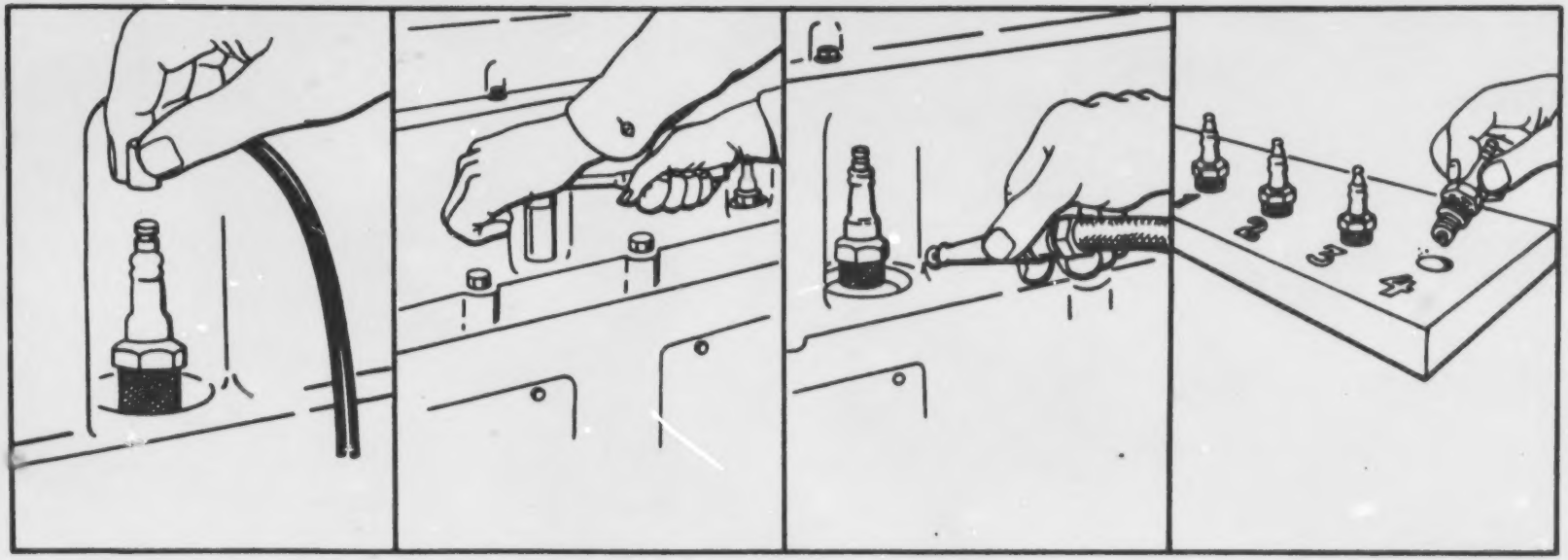


CLEANING BATTERY

PARTS OF A SPARK PLUG



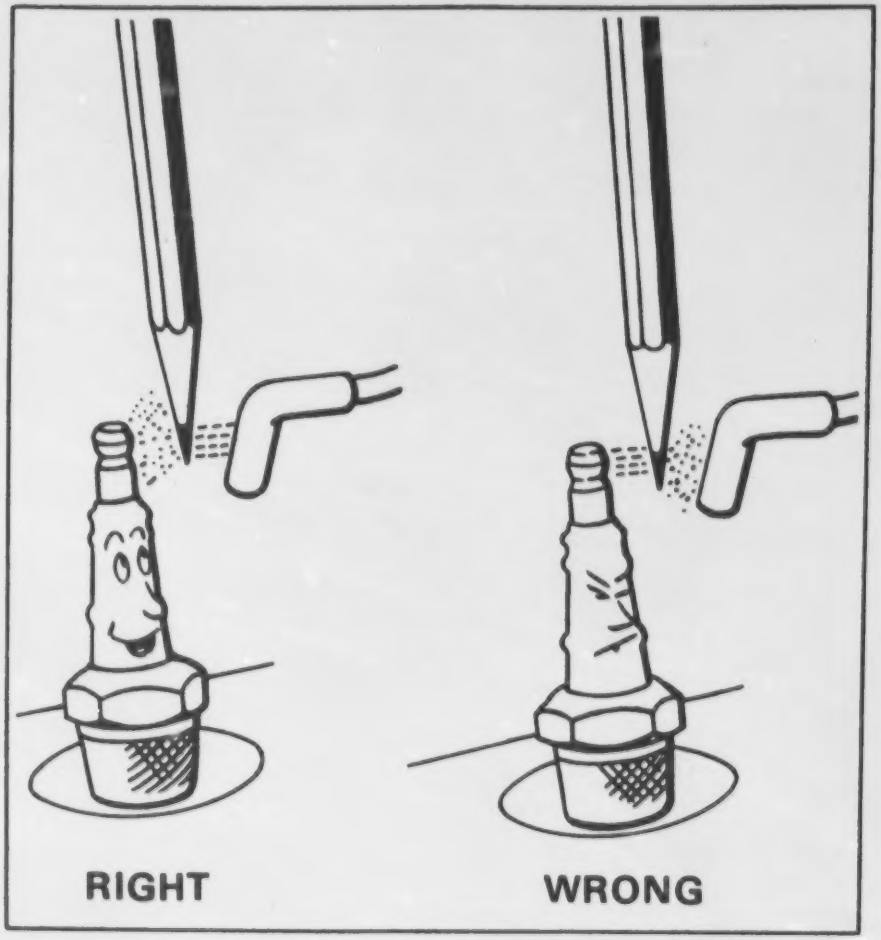
REMOVING SPARK PLUGS



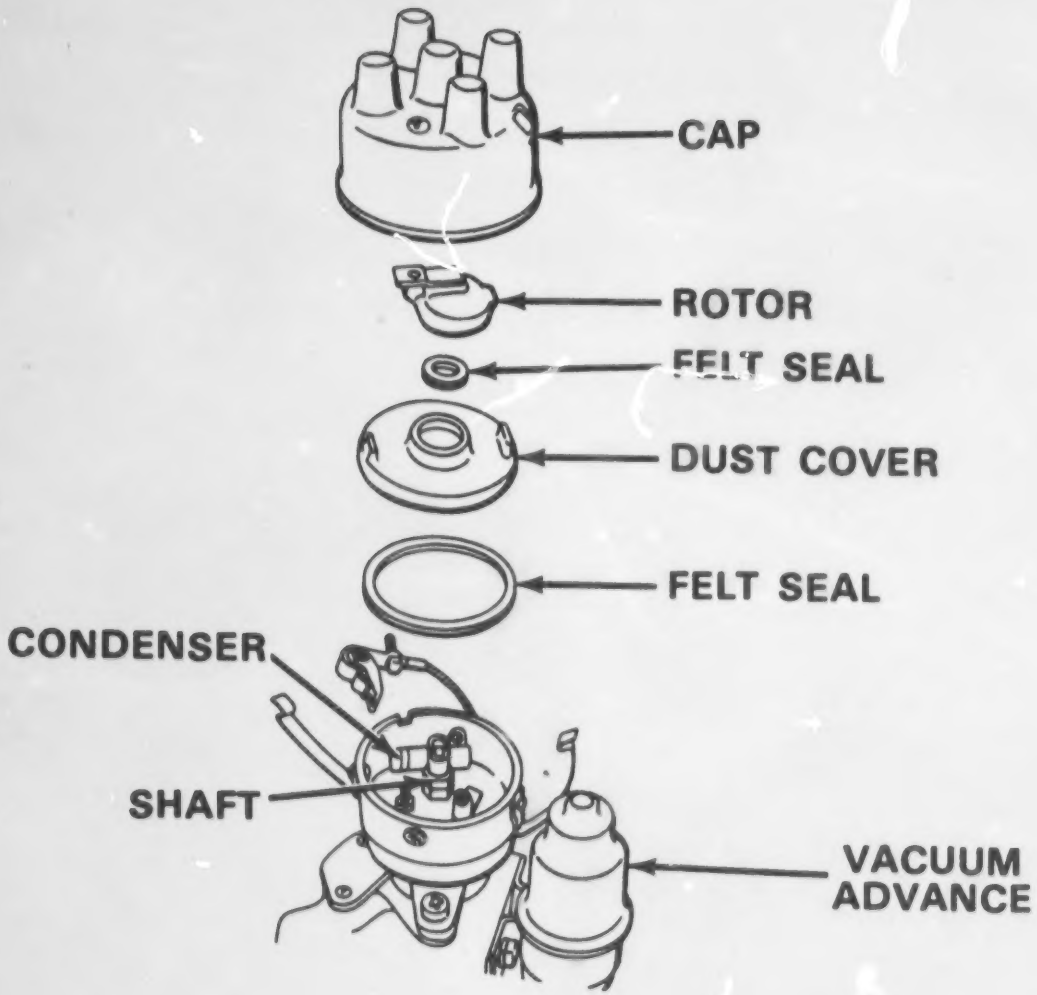
1. Pull up only on connector to remove wire.
2. Hold socket wrench straight while loosening plug.
3. Remove dirt from around plugs before removing.

Place plugs in order for easy identification.

POLARITY (DIRECTION OF CURRENT) IS IMPORTANT

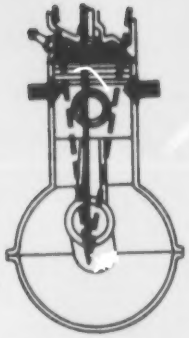


PARTS OF A DISTRIBUTOR



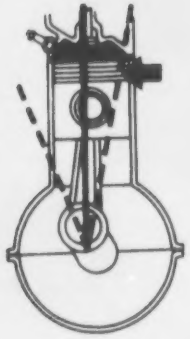
WHY IS "SPARK ADVANCE" NECESSARY?

4° BTDC



1000 RPM . . . CRANKSHAFT, PISTON, ETC.
TURNS 5976 DEGREES/SEC.

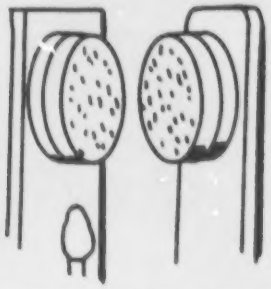
20° BTDC



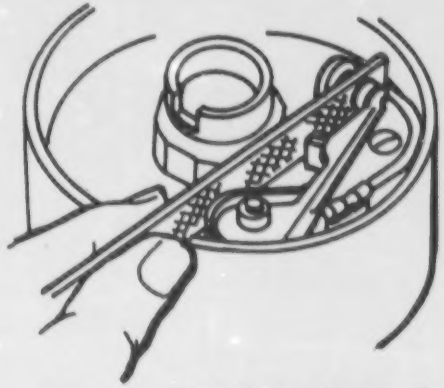
2000 RPM . . . CRANKSHAFT, PISTON, ETC.
TURNS 11,952 DEGREES/SEC.

**Yet fuel does not burn any faster at higher rmps—
SO, FUEL IS IGNITED SOONER (advanced)
to allow fuel to burn during maximum compression**

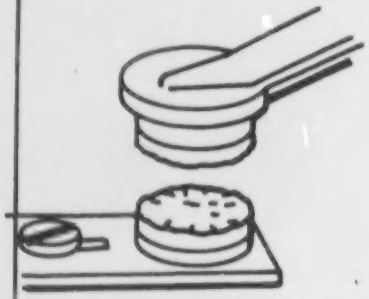
IGNITION POINT PROCEDURES



A. POINTS SLIGHTLY PITTED.



B. FILE POINTS SMOOTH WITH IGNITION FILE.



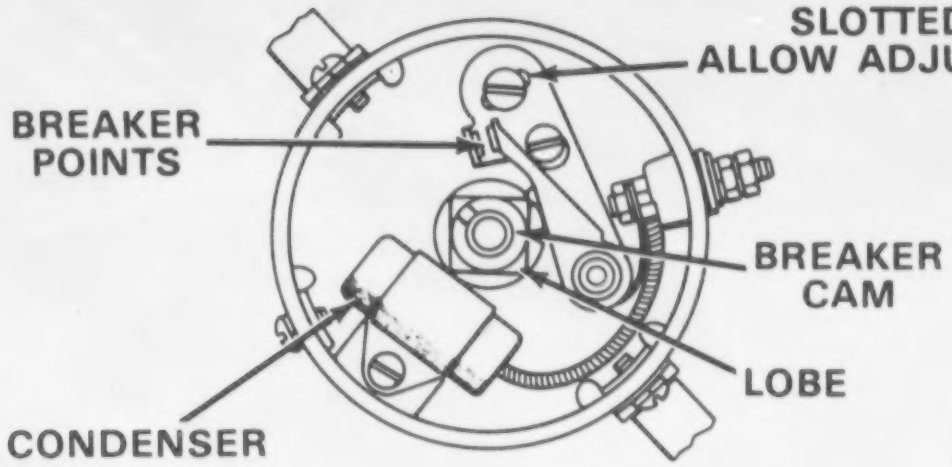
C. REPLACE BADLY PITTED OR ROUGH POINTS.

NOT PARALLEL

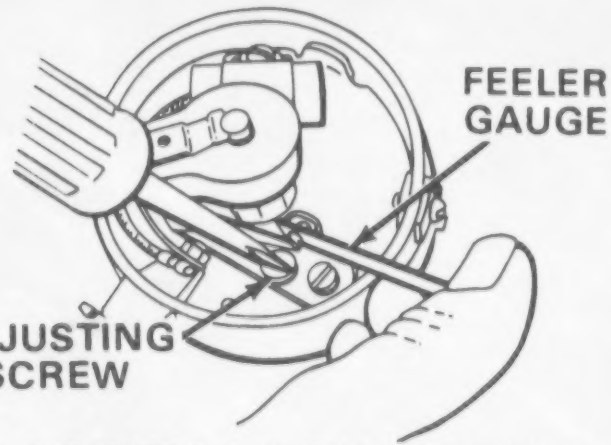
NOT ALIGNED

PROPER ALIGNMENT

HOW TO ADJUST DISTRIBUTOR



-140-



A - LOOSEN LOCK SCREW
B - ADJUST POINTS WITH ADJ. SCREW

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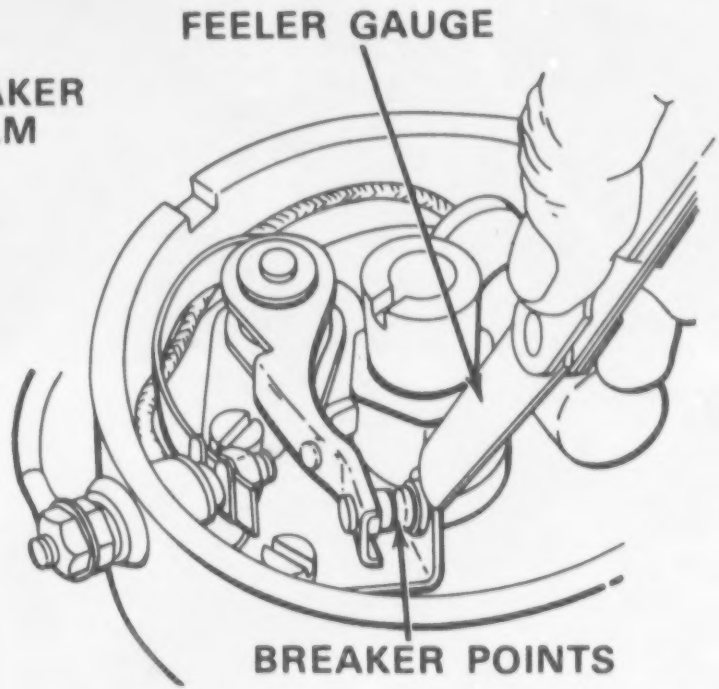

USING FEELER GAUGE

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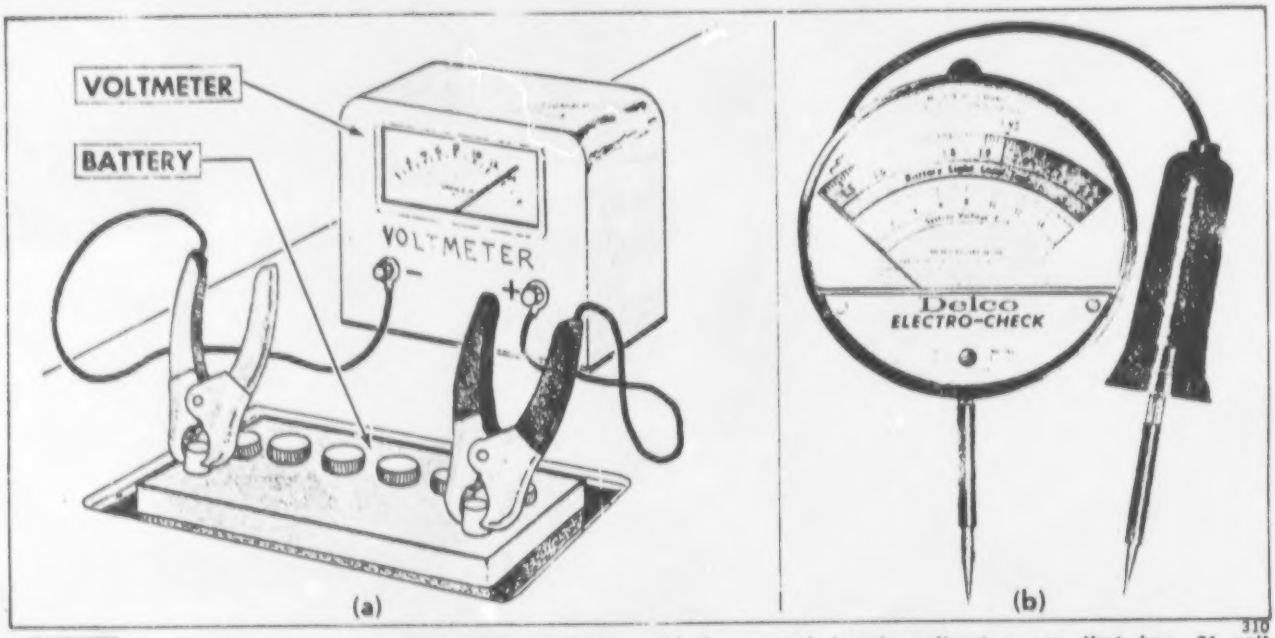
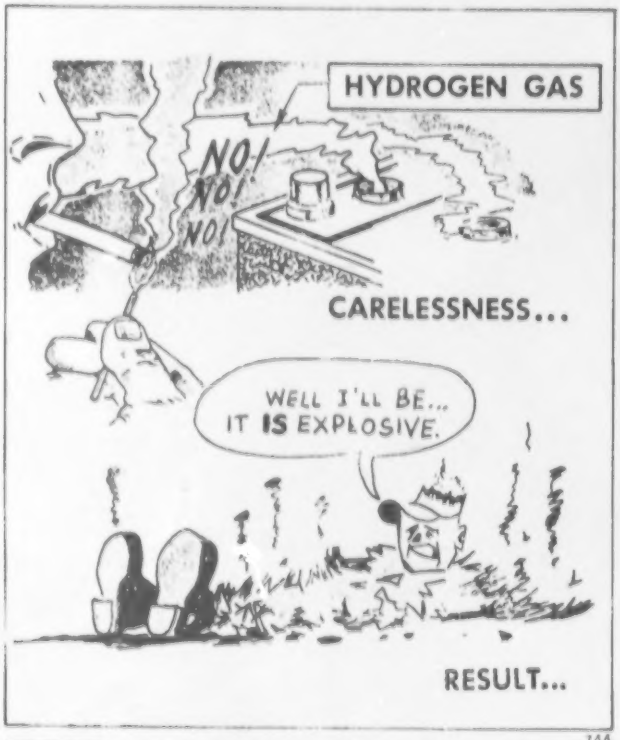
CHECKING BATTERY ELECTRICAL CONDITION



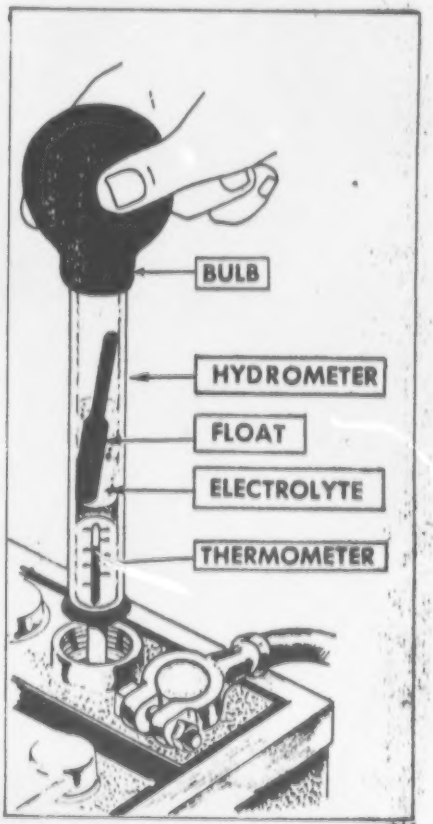
310

[redacted]. (a) Testing the battery voltage with a voltmeter. (b) An expanded-scale voltmeter—one that has .01 volt per scale division.



744

[redacted]. A battery that has been charging may have enough hydrogen gas present to cause an explosion or fire in the presence of a spark or flame.



744

[redacted]. Draw electrolyte into hydrometer slowly.

VESL LESSON PLAN CLASS ESL/Farm Equipment Operation and Maintenance WEEK # 22

1) LESSON TOPICS: "Bearings and Seals--Identification and Maintenance of Engine Lubrication System"

ESL

VOC

2) BEHAVIORAL OBJECTIVES:

ESL Be able to identify, pronounce and know usage and meaning of words related to the maintenance of various bearings and seals.

VOC Know and be able to perform necessary maintenance procedures common to serviceable bearings and seals. Continue ignition timing, valve adjusting, tractor operation.

3) LESSON OUTLINE: (TEACHING METHODS, STUDENT ACTIVITIES, EVALUATION INSTRUMENTS)

ESL "Probably the most common maintenance problem in farm equipment is presented by bearings and seals. Constant monitoring and maintenance is an important part of the operator's duties."

After making this statement, write words unclear to students onto board. Pronounce each and have students repeat.

Introduce vocabulary with definitions for bearings and seals. Show illustrations of each using slides, transparencies or parts themselves.

(OBJECTIVES, continued) CLASS ESL/Farm Equipment Operation and Maintenance WEEK # 22

VOC Show and explain the maintenance procedures. Incorporate words taught in ESL component. Continue ignition timing, valve adjusting, tractor operation.

4) NEW VOCABULARY: Misalignment, bearings, seals, lubrication, grease fittings, oil filters, dry and wet filters, anti-friction bearings, grease gun.

5) MATERIALS NEEDED: Slide/transparencies, bearing and seal samples, John Deere Bearings and Seals Slide series, slide hammer.

6) LESSON EVALUATION: The slide/transparencies worked well. But, we didn't use the cassette audio that came with them because they were too technical and were not suited for use with NES-LES students.

The vocational teacher explained the more technical phases of the material and the ESL teacher recorded the oral presentation when needed and drilled many of the words and concepts.

VESL LESSON PLAN CLASS ESL/Farm Equipment Operation and Maintenance WEEK 23

1) LESSON TOPICS: Wheel Bearing Packing & Brake Adjusting

2) BEHAVIORAL OBJECTIVES:

ESL The student will be able to identify the wheel bearing packing and brake adjusting terminology with proper verb usage.

VOC The student will be able to pack the wheel bearings on a farm tractor and adjust the rear wheel brakes.

3) LESSON OUTLINE:

ESL As the students are observing the Vocational instructor demonstrate each of the tasks, the ESL instructor will have the students repeat some of the associated terminology and performance. Use appropriate drills until mastery is obtained.

VOC Students were shown an actual demonstration of wheel grease packing, what to look for in checking the seals and bearings, disassembly and re-assembly of a wheel and some students to perform, also. Students were explained different grades of grease. Show slide transparencies on topic.

4) NEW VOCABULARY:

Front wheels, rear wheels, packing and wheel bearings.

5) MATERIALS NEEDED:

Tractor, grease, tools, John Deere slides.

6) LESSON EVALUATION:

We had not planned for all students to perform these tasks due to lack of time, but, as the demonstration went on, each student was allowed to feel and touch most of the tasks involved.

VESL LESSON PLAN CLASS ESL/Farm Equipment Operation and Maintenance WEEK # 24

1) LESSON TOPICS: Valve Timing & Ignition Timing & Adjustment

ESL

VOC

2) BEHAVIORAL OBJECTIVES:

ESL

a) Student must learn to listen to instructions on how to perform a task.
b) Student must be familiar with an be able to pronounce terms involved with various tasks.

VOC

a) Student must be able to time and adjust valves and start a hand-crank engine.
b) Student must be able to adjust points and time ignition system.
c) Student must be able to back a towed implement through a precision course.

3) LESSON OUTLINE: (TEACHING METHODS, STUDENT ACTIVITIES, EVALUATION INSTRUMENTS)

ESL

Student activities included valve timing and adjustment, ignition timing and adjustment, tractor and towed implement precision backing exercise, distributor and valve timing to be performed on an actual engine until timed correctly, continuation of distributor and valve timing and adjusting instruction and procedures with related terminology, repetition of procedure to learn to follow instructions, repeating names of the parts and verbs. Related terminology in backing up a tractor though an obstacle course.

(This phase of the course had been done previously, but some new student had not completed this part and also those that had, felt they needed the additional practice.)

VOC Same

4) NEW VOCABULARY: Timing, crank, cam shaft, tappets, setting, exhaust stroke, intake stroke, fly wheel, top dead center (TDC), before top dead center (BTDC), degrees, tow, implement, back up, forward.

5) MATERIALS NEEDED: Old tires laid on ground for obstacle course, tractor, side-delivery rake, two mounted engines, open-end wrenches, feeler gauge.

6) LESSON EVALUATION: Since we only had one engine to work on for valve adjusting, and one to adjust the distributor, we also had a third group perform the precision backing exercises. This division of tasks worked out very well. We also assigned ourselves--the two teachers and the aide--to each group.

VESL LESSON PLAN CLASS ESL/Farm Equipment Operation and Maintenance WEEK 25

1) LESSON TOPICS:

Tractor and Implements Backing Exercise with Drawn-Type Implement; Implement Operation

2) BEHAVIORAL OBJECTIVES:

ESL The students will be able to (1) verbally identify the various implements used and (2) explain their functions.

VOC The students will be able to hook up the implements then back up with the side delivery rake, following a pre-set course.

The students will be able to operate the disk and plow.

3) LESSON OUTLINE:

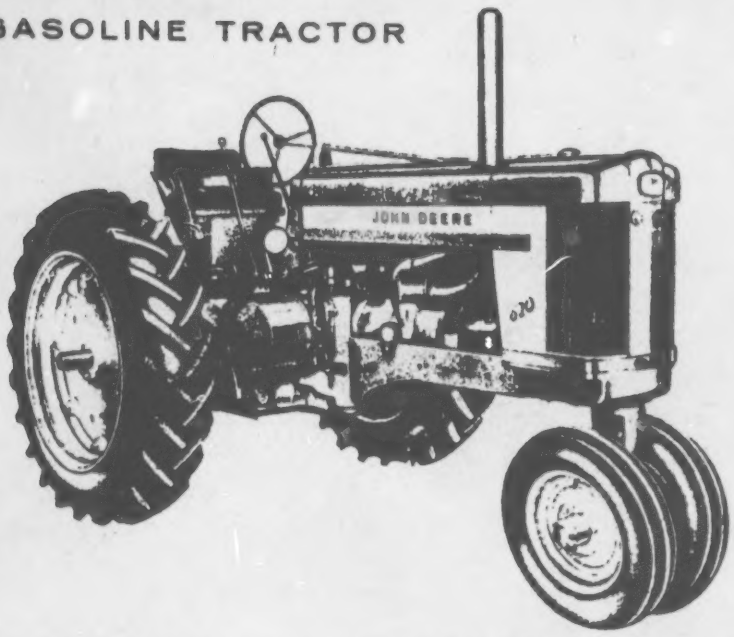
ESL (Repeat of Lesson 11 for Newer Students)
The students will go outside to learn identification of implements: the various disks, etc. Use flash cards for the students to identify the written names of the implements.

VOC While showing how to hook up and operate the various implements, use vocabulary introduced in ESL lesson. Have teacher aide record performance of students hooking up and operating. Give students ample opportunity to practice.

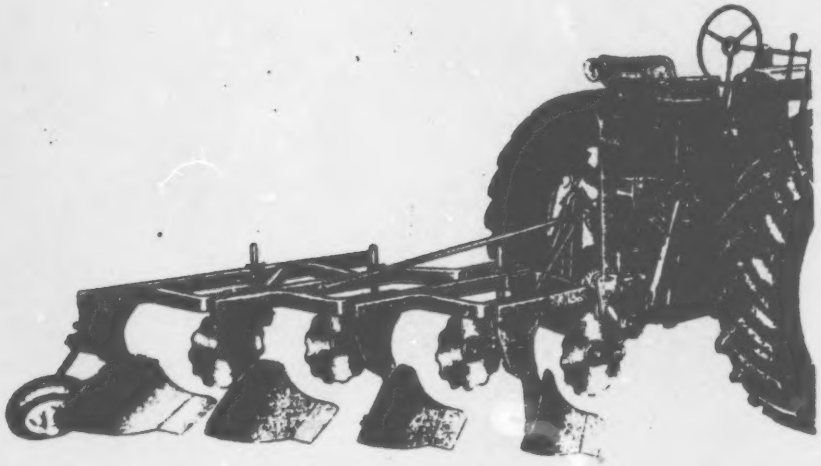
4) NEW VOCABULARY: Side delivery rake, disk, plow.

5) MATERIALS NEEDED: Flash cards, various disks, tractor, side delivery rake. See Documentation for Handouts on page 168-b

6) LESSON EVALUATION: The students already somewhat familiar with implements from work experiences generally were more accurate in naming the various implements. The flash cards helped.

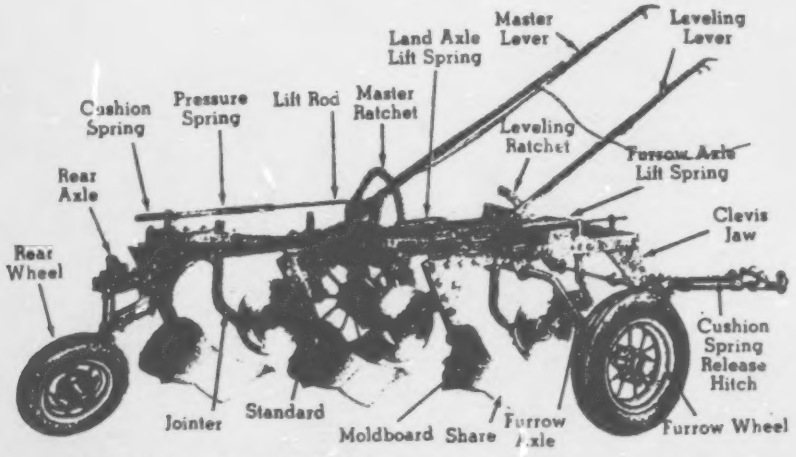


–The adjustable, rear-wheel-tread, general-purpose tractor with gasoline-burning engine.



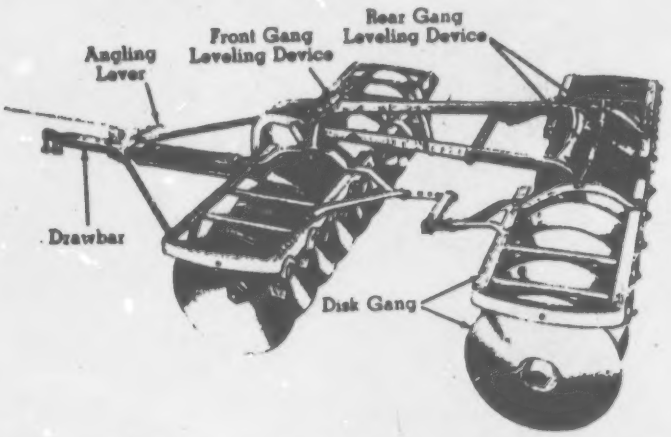
–Four-bottom integral plow attached to universal 3-point hitch of general-purpose tractor.

MOLDBOARD PLOWS

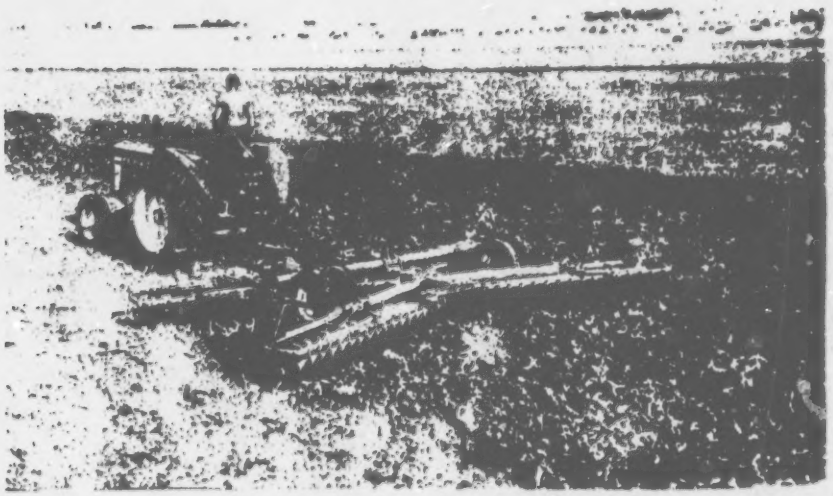


–The three-bottom, drawn-type tractor plow with its important parts designated.

DISK HARROWS



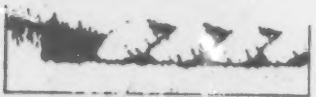
—The four-gang disk harrow with principal parts designated; shown in transport position.



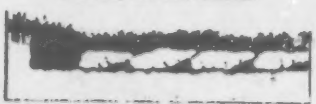
—The big-capacity, 21-foot, wheel-type, 4-gang disk harrow shown behind a standard-tread tractor, covers as much as 125 acres a day. This equipment was photographed in Nebraska.

The Disk Harrow in the Type and Style Best Suited for Your Acreage Will Perform Efficiently in All Conditions When Correctly Adjusted, Properly Serviced

Sun-baked stubble land.

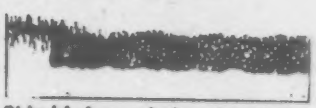


Plowed, but not disked.



Disked after plowed, but not before. Notice air spaces.

Disked and then plowed. Good contact with subsoil.

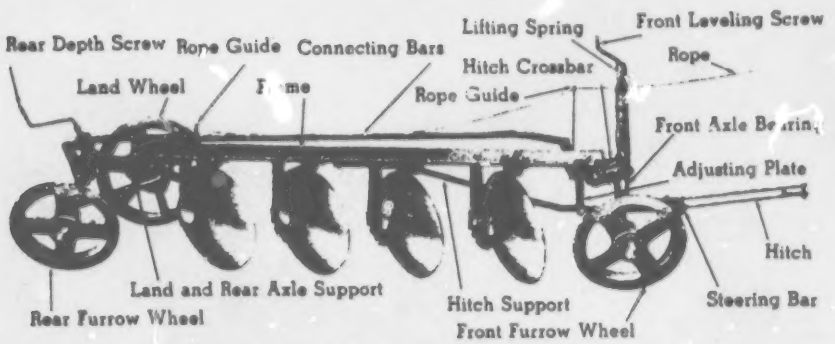


Disked before and after plowed. The ideal seedbed.

—Drawings at left illustrate the value of disking both before and after plowing.

DISK PLOWS

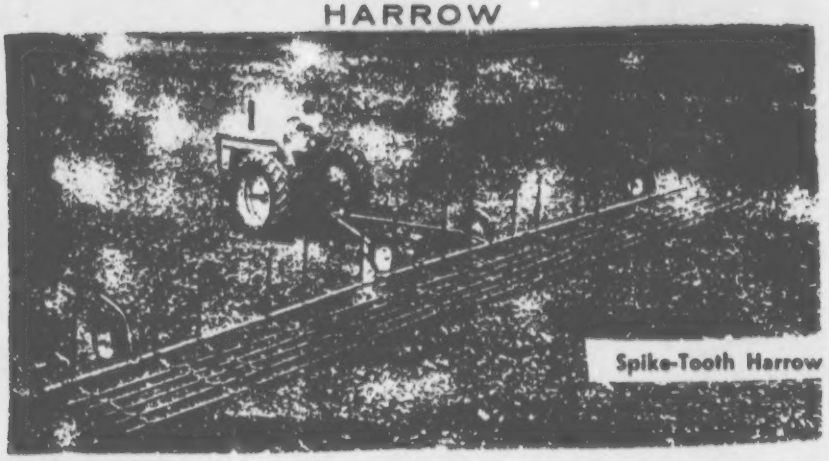
The Disk Plow, Efficient in Hard, Dry Soils . . . Loose Soils . . . Stony, Stumpy, Rooty Soils, Requires Careful Adjustment . . . Proper Hitch Setting for Best Work



-The tractor-drawn disk plow with important parts designated.

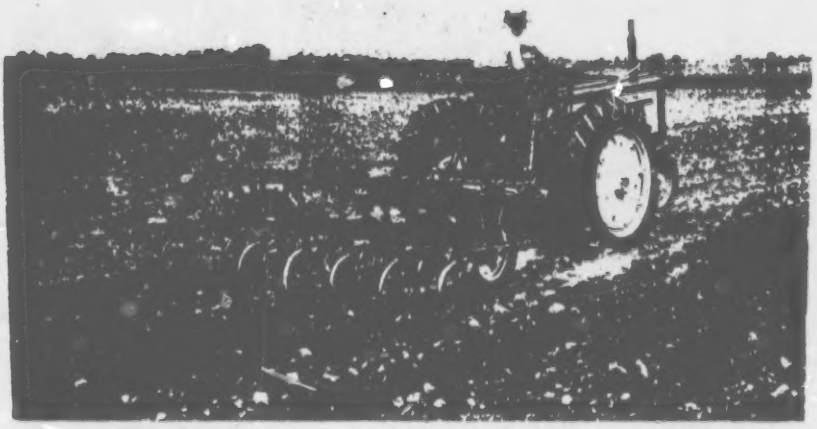
-An integral three-furrow, two-way disk plow preparing a seedbed.

HARROW



Spike-Tooth Harrow

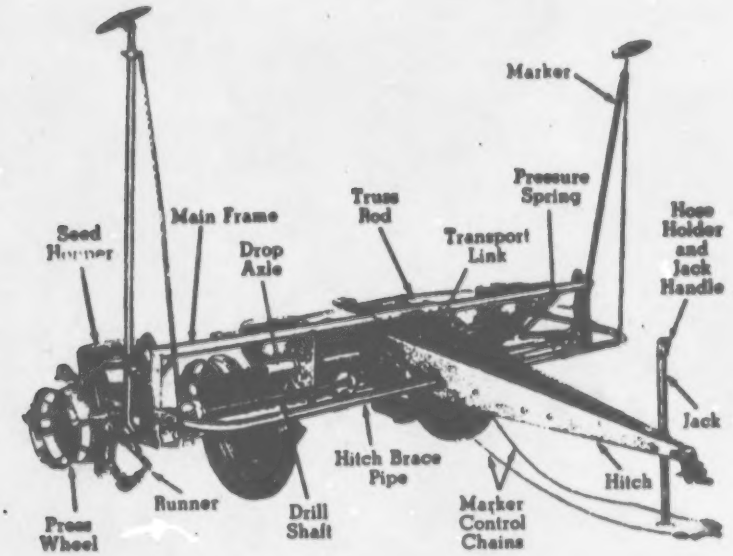
FIELD CULTIVATOR



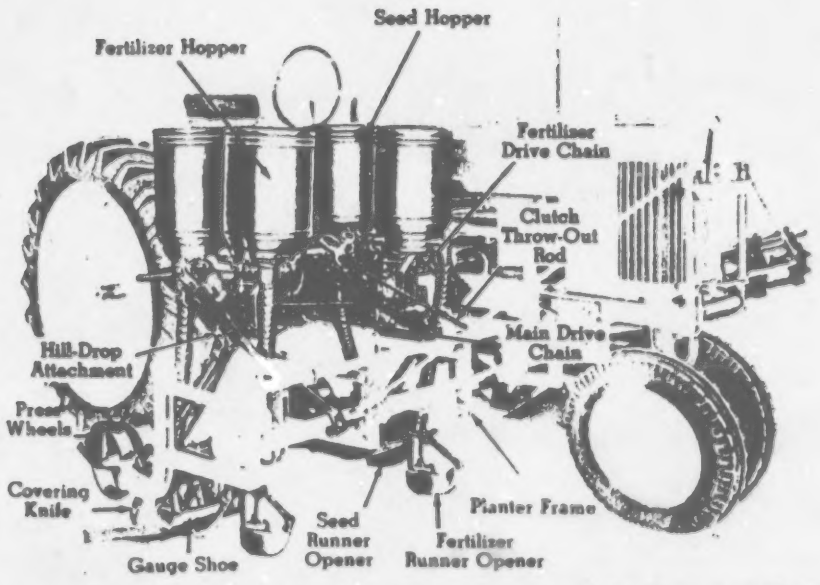
—The drawn-type field cultivator is ideal for seedbed preparation and renovating pasture

Finishing Seedbeds May Require a Spike-Tooth or Spring-Tooth Harrow, Field Cultivator, Tool Carrier, or Pulverizer, Depending on Your Farming Practice

CORN PLANTERS

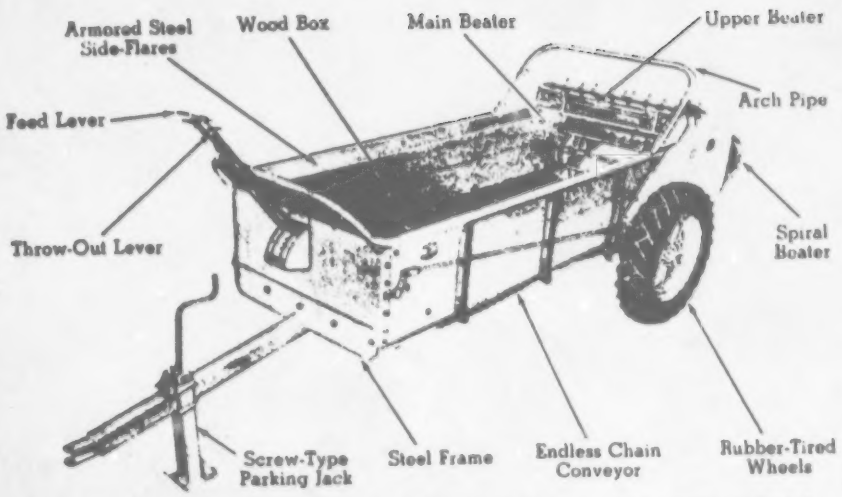


-The four-row, drawn-type corn planter with the principal parts named.



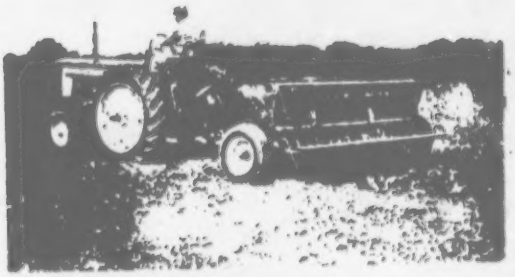
--Detail illustration of planting and fertilizing equipment attached to the tractor cultivator and general-purpose tractor. This equipment is available in various types to meet different requirements.

MANURE SPREADERS

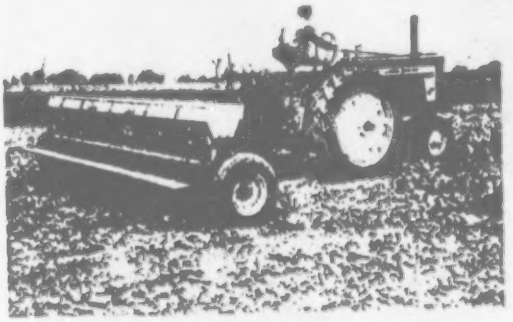


-The tractor-drawn manure spreader of the two-wheel type; principal parts are named.

Types of Drills

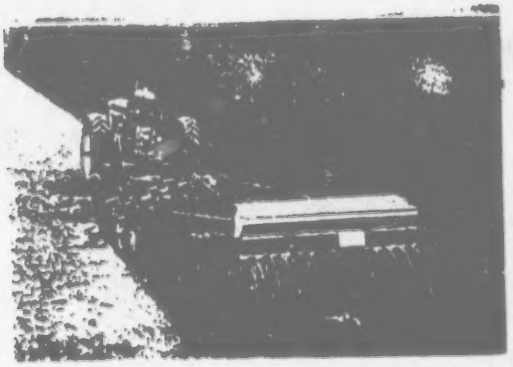


—The fertilizer-grain drill.

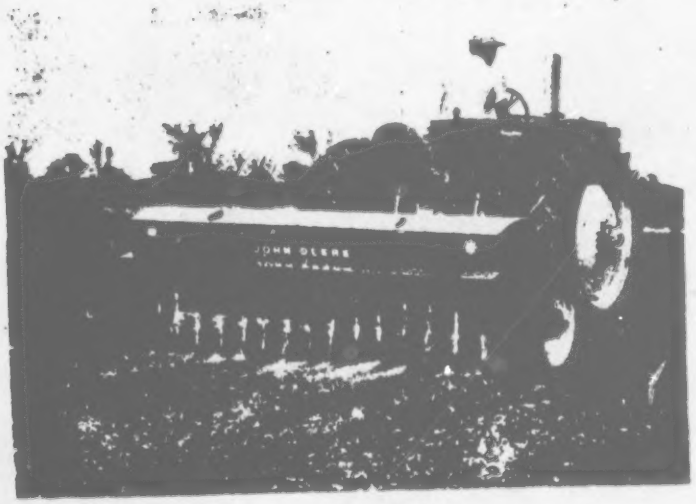


—The plain or straight grain drill.

—The lister-type press grain drill.

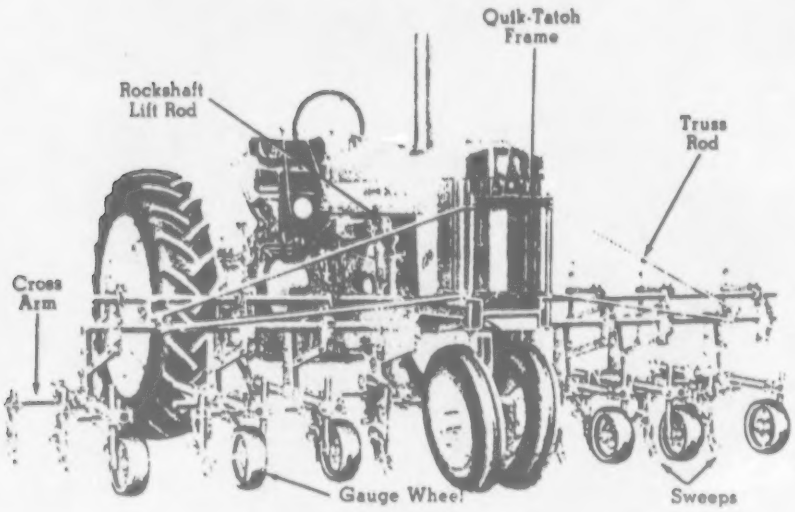


Lime and Fertilizer Distributors



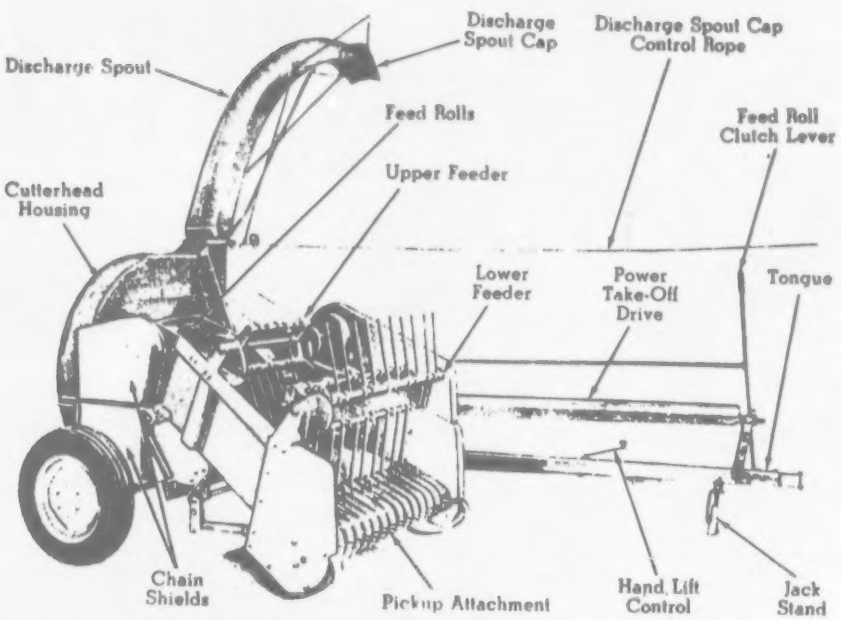
-This fertilizer distributor handles lime and fertilizer.

TRACTOR CULTIVATOR



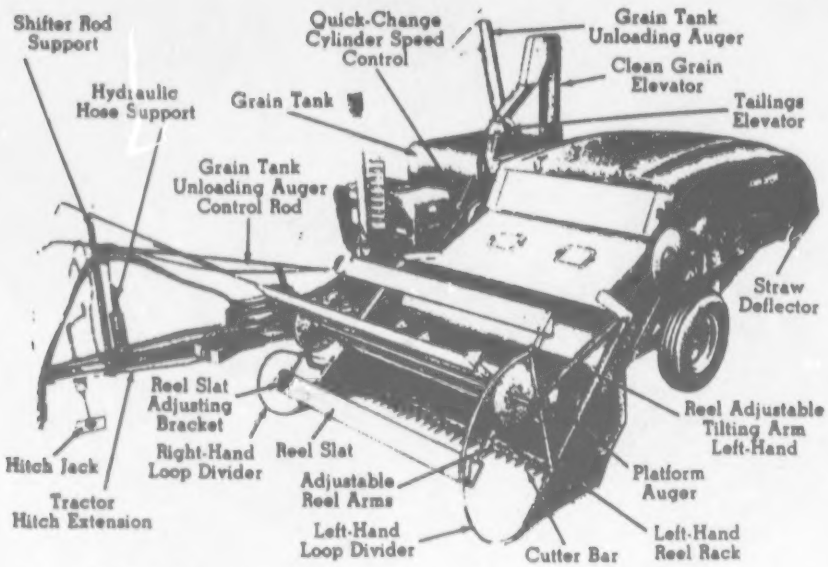
-The 4-row tractor cultivator mounted on a general-purpose tractor. Principal parts indicated

FORAGE HARVESTER



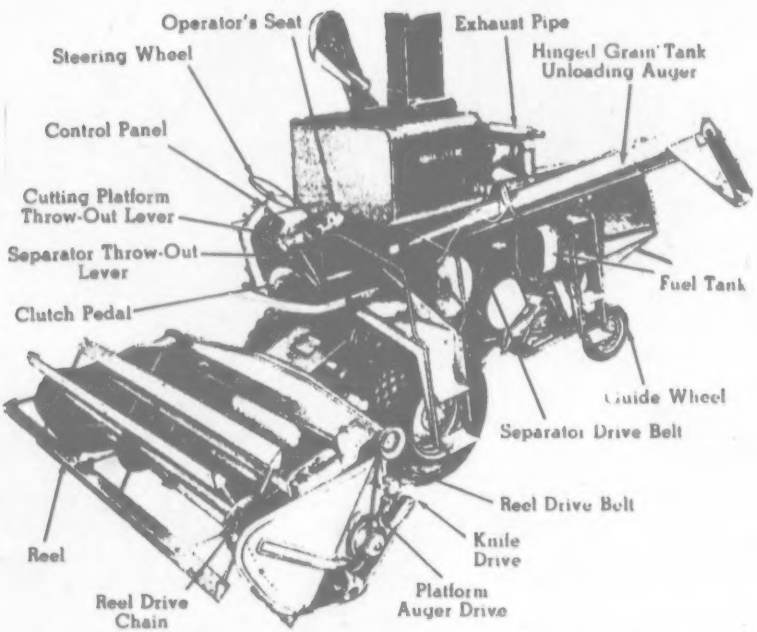
-The important parts of the forage harvester with pickup attachment are shown above.

Chopping Hay Reduces Labor Cost . . . Insures Hay of Higher Feeding Value . . . Harvester Makes High-Grade Ensilage . . . Care of Knives Most Important



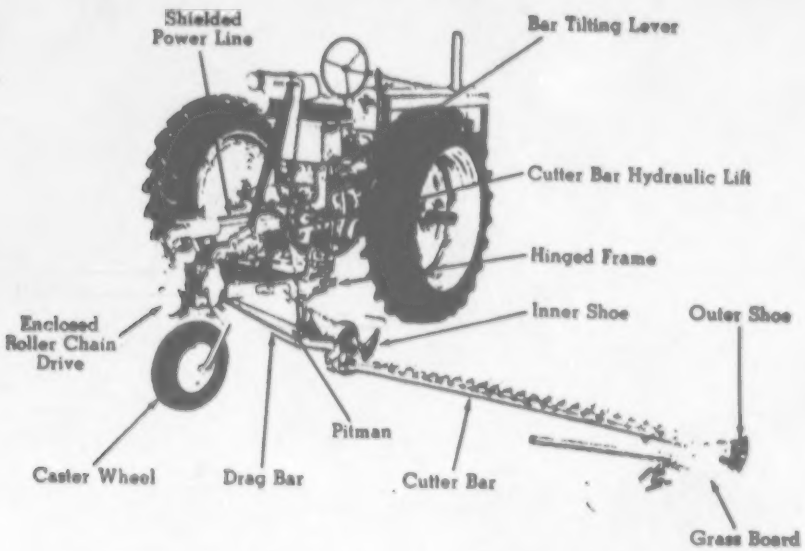
-The small, full-width, straight-through combine with the principal parts indicated.

Self-Propelled



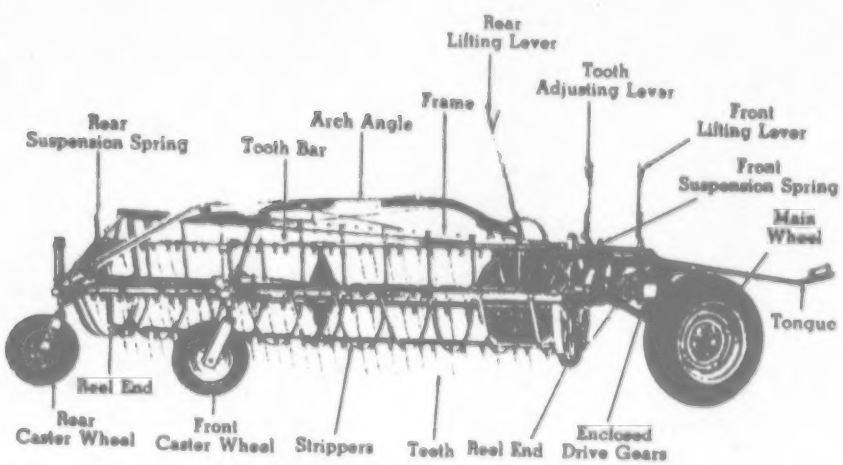
-Some important units of the self-propelled combine are indicated in this view.

MOWER



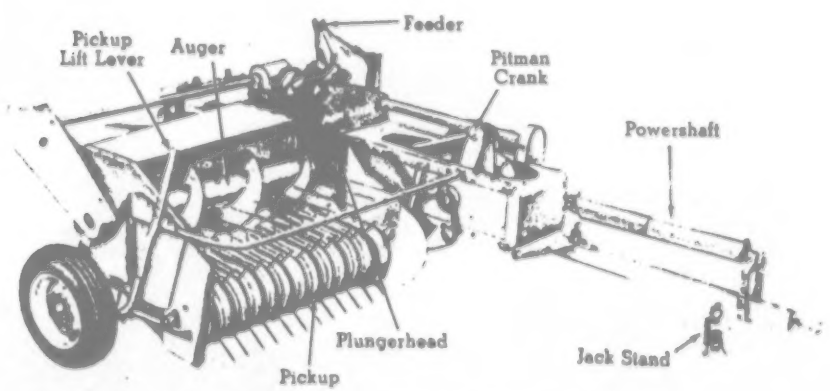
—The semi-integral tractor mower and general-purpose tractor. Principal parts are named.

RAKE



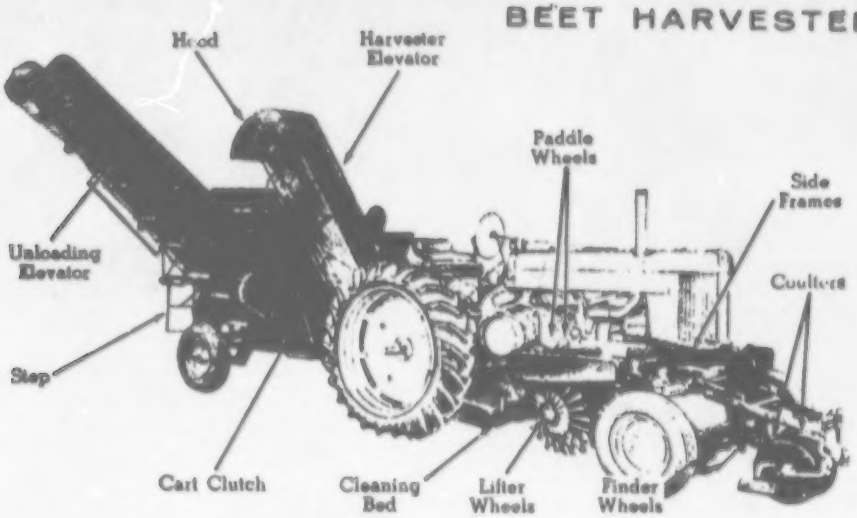
—The low-wheel, drawn-type side-delivery rake with principal parts indicated.

AUTOMATIC BALERS



—The twine-tying baler with power take-off. Principal parts are named.

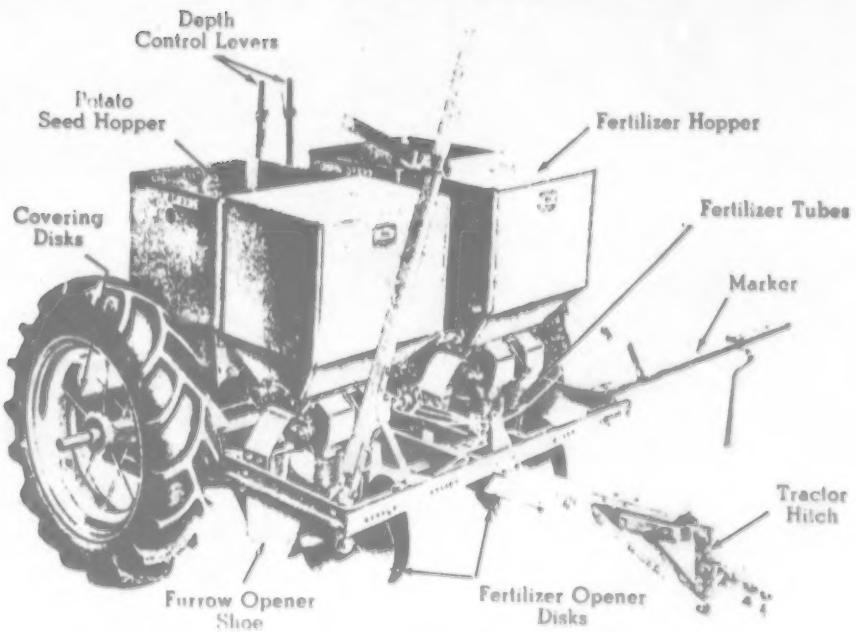
BEET HARVESTER



—The one-row beet harvester with the important parts indicated.

One- and Two-Row Beet Harvesters Save Man-Hours . . . Top and Lift Beets . . . Load Them Into Trucks . . . It's Precision Equipment That Requires Careful Adjustment

POTATO PLANTER



—The 2-row tractor-drawn potato planter with the important parts indicated.

Potato Planters, Available in Several Types, Pick and Drop Potato Seed Accurately ... Fertilizer Attachments Place Fertilizer Properly . . . Simple Adjustments and Lubrication Required

VESL LESSON PLAN CLASS ESL/Farm Equipment Operation and Maintenance WEEK 26 - Day 1

1) **LESSON TOPICS:** Adjustment and Operation of the 3-Point Lift Offset Disk.

(The 3-point lift offset disk is commonly used in small orchards and vineyard farming operations. It is also used in confined areas where turning room is limited.)

2) **BEHAVIORAL OBJECTIVES:**

ESL Students should be able to pronounce and know usage and meaning of words and instructional phrases used in the operation and adjustment of the lift disk with a 3-point hook-up.

VOC Student should be familiar with proper adjustment and be able to operate properly in conjunction with draft control system.

3) **LESSON OUTLINE:**

ESL Each student hooks up the disk harrow to the tractor and makes the proper adjustments on the 3-point hook-up. Again, according to the amount of light conditions, outside before it gets too dark, students perform the field operation tasks and exercises during the first half of the class--for one hour and 15 minutes. During the second half, the students go back into the classroom and review the terms and concepts that were learned outside in the field.

VOC

Same

4) **NEW VOCABULARY:** Offset disk, orchard, vineyard, integral-type implements, drawn-type implements, draft control, surface (wet, dry, soft, hard).

5) **MATERIALS NEEDED:** Tractor and disk, 9-page hand-out on various common farm implements.

6) **LESSON EVALUATION:** The idea of each student performing the critiques on each other worked out. This was done informally and each student was left on his own to evaluate the other student as they performed. Those who did not perform as well, were allowed to spend the most time on the tractor. Those who had previous experience or who had performed well in class performed first to allow the less experienced students to observe more before performing. This also allowed the less experienced ones to ask questions and to learn the safety precautions necessary.

VESL LESSON PLAN CLASS ESL/Farm Equipment Operation and Maintenance WEEK # 26 - Day 2

1) LESSON TOPICS:

ESL Equipment Operation--Adjustment and Operation of the Moldboard Plow

The moldboard plow is the most common of all tillage implements. It is used extensively in open field, field crop truck crops, row crops and pasture renovation operations.

VOC Same

2) BEHAVIORAL OBJECTIVES:

ESL Students will be able to pronounce and know usage and meaning of words and instructional phrases used in the operation and adjustment of the moldboard plow.

VOC Students will be able to hook up the 2-bottom integral plow to the tractor and make the proper adjustments for plowing and use of draft control.

3) LESSON OUTLINE: (TEACHING METHODS, STUDENT ACTIVITIES, EVALUATION INSTRUMENTS)

ESL Each student, after hooking up and making the proper depth and pitch adjustments on the plow, is to take turns mounting the tractor and participate in plowing a piece of ground, making sure the students understand the purpose of draft control with the plow on the 3-point hitch and how this type of control works, versus position contorl.

The first half of the class period is to be spent outside in the field and the second half in the classroom. Each student is to be evaluated by each other and by the instructors by proving their actual ability and performance on the tractor.

(OBJECTIVES, continued) CLASS ESL/Farm Equipment Operation and Maintenance WEEK # 26 - Day 2

VOC Same

4) NEW VOCABULARY: Moldboard plow, parts of plow such as: standard, share, moldboard, rear wheel, integral or 3-point hook-up, draw-bar, Other terms: furrow, raise or lift, lower the plow, hard ground, shallow.

5) MATERIALS NEEDED: Flash cards, tractor, plow, open field, hand-outs on implements.

6) LESSON EVALUATION: Generally, as in other classes in the field, the students who have had some experience with a tractor, were asked to perform first to show the way after the vocational instructor demonstrated. This worked out very well. It would have been even better if more than one tractor was used, but we had just one. This way the students would have had more practical experience, rather than by just observing most of the time.

VESL LESSON PLAN CLASS ESL/Farm Equipment Operation and Maintenance WEEK 27

1) **LESSON TOPICS:** Equipment Operation--Adjustment and Operation of the Ridger

(The ridger is the common implement used to make levees for the purpose of controlling flood irrigation.)

2) **BEHAVIORAL OBJECTIVES:**

ESL Students should be able to pronounce and know usage and meaning of words and instructional phrases used in the operation and adjustment of the ridger.

VOC Students should be familiar with proper adjustment, be able to operate the ridger properly so that an adequate levee is the result and develop understanding of draft control system.

3) **LESSON OUTLINE:**

ESL Each student is to perform by operating the tractor with the ridger attached and make levees in the field. Other students to observe and to critique the one who performs. The better qualified students are to perform first so that the less qualified can learn by observation.

Show safety slide transparencies of farm equipment.

VOC Same

4) **NEW VOCABULARY:** Ridger, levees, irrigation, ridges, flood irrigation.

5) **MATERIALS NEEDED:** Tractor and ridger, safety slide transparencies.

6) **LESSON EVALUATION:** It was found that when the student was evaluated and critiqued by the other students, rather than just the instructors, he would try to perform better.

VESL LESSON PLAN CLASS ESL/Farm Equipment Operation and Maintenance WEEK 28

1) LESSON TOPICS: Equipment Operation--Attachment and Adjustment of 3-Point Implements.

Proper attachment of implements to the 3-point lift is important to operator efficiency and proper equipment operation.

2) BEHAVIORAL OBJECTIVES:

ESL

Students should be able to pronounce and know usage and meaning of words and instructional phrases used in the attachment and adjustment of 3-point implements. Example: "Connect the lower left lift arm to the implement first."

VOC

Each student will back the tractor from a right angle position to a to a position of attachment with the implement. Each student will attach implement in proper order and will properly adjust lower right lift arm and top link.

3) LESSON OUTLINE:

ESL The tractor is to be operated by each student on level ground, taking turns--one at a time--the remainder of the class to observe and critique the student who is performing. This critique to be the evaluation method--each student to perform in front of the whole class in the field. The ESL method to be also applied in the field as each student perform when needed. Then, also, a review of all terms, again repeated and drilled in the classroom during the

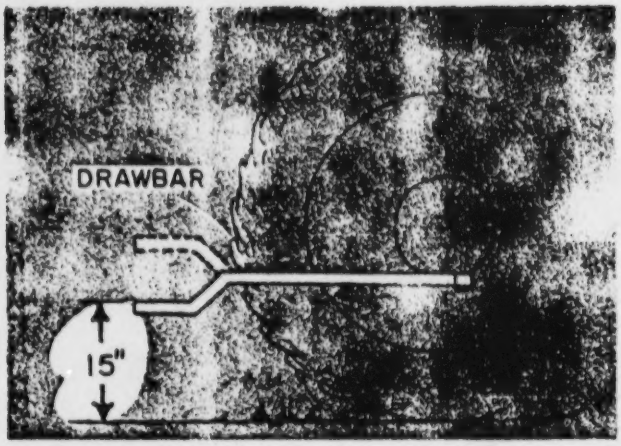
VOC second half of the class, when it normally gets too dark outside for operation of the tractor.

4) NEW VOCABULARY: Left lift arm, right lift arm, top link, A-frame, draw pin, hitch pin, linch pin.

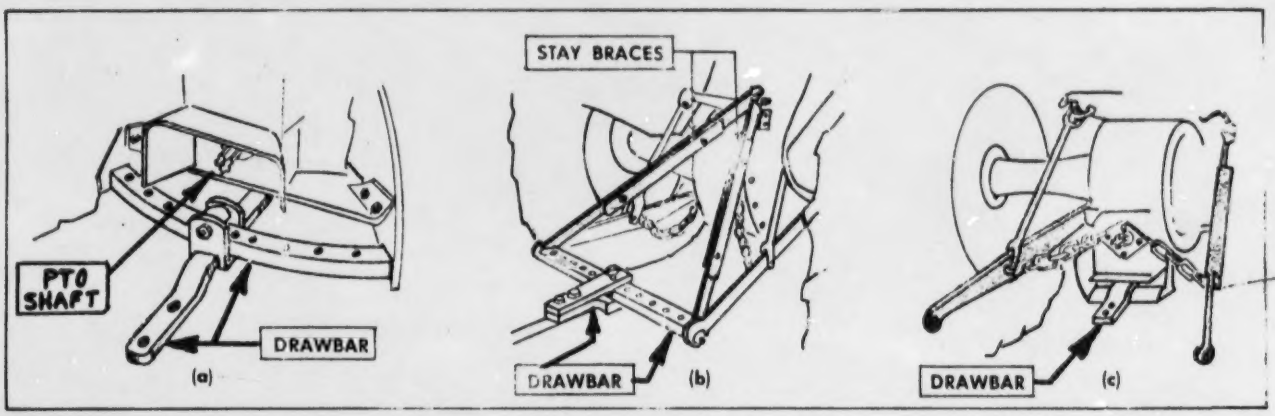
5) MATERIALS NEEDED: See Documentation for Handouts on page 168-b

6) LESSON EVALUATION: These activities went well, especially when each student knew that he was going to perform for everybody to observe--he paid attention. During the whole course, we had just one female student and we had to keep reminding the students to not tease her as she has been refusing to drive the tractor lately because of the teasing.

DRAWBAR + THREE-POINT HITCH



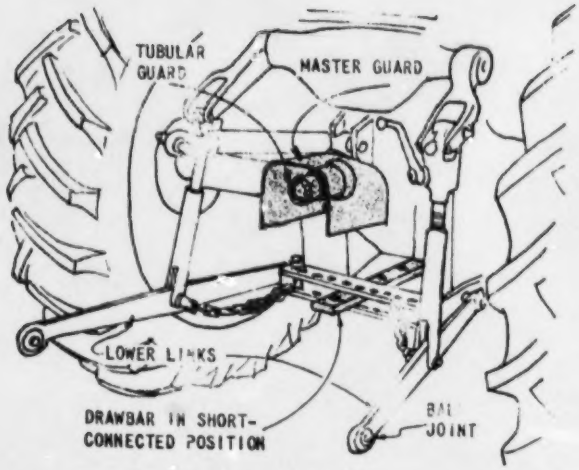
[redacted]. A 15-inch height used with power take-off equipment, is satisfactory for most other drawbar purposes.

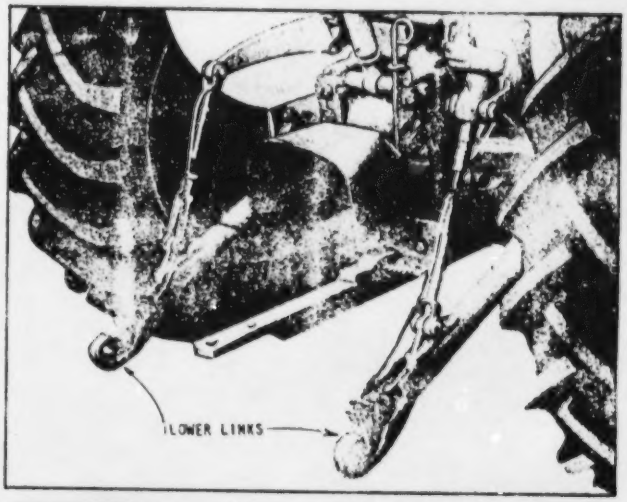


[redacted]. A tractor may have: (a) a drawbar only, (b) a drawbar mounted as part of a three-point hitch, or (c) a combination of both—a separate drawbar and a three-point hitch.

[redacted]. (a) Use drawbar in short position for equipment not requiring a power take-off connection. (b) Extend drawbar for power take-off hookup. (c) Supplemental plate used to lengthen drawbar to ASAE standard length.

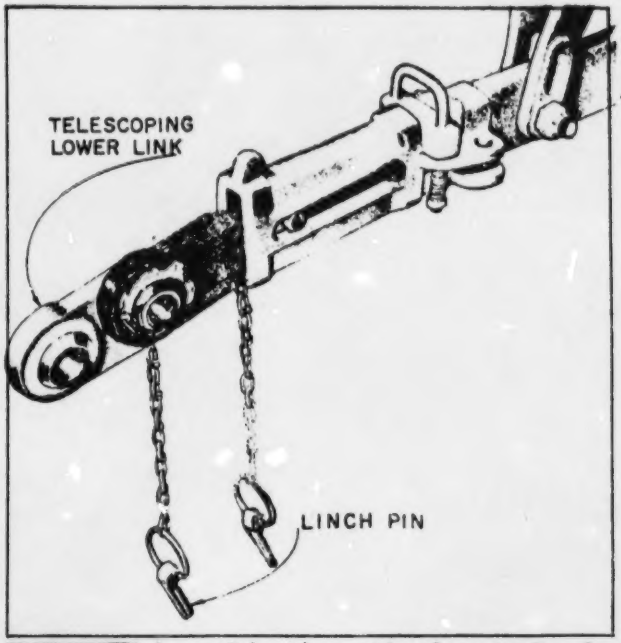
THREE-POINT HITCH OR HOOK-UP





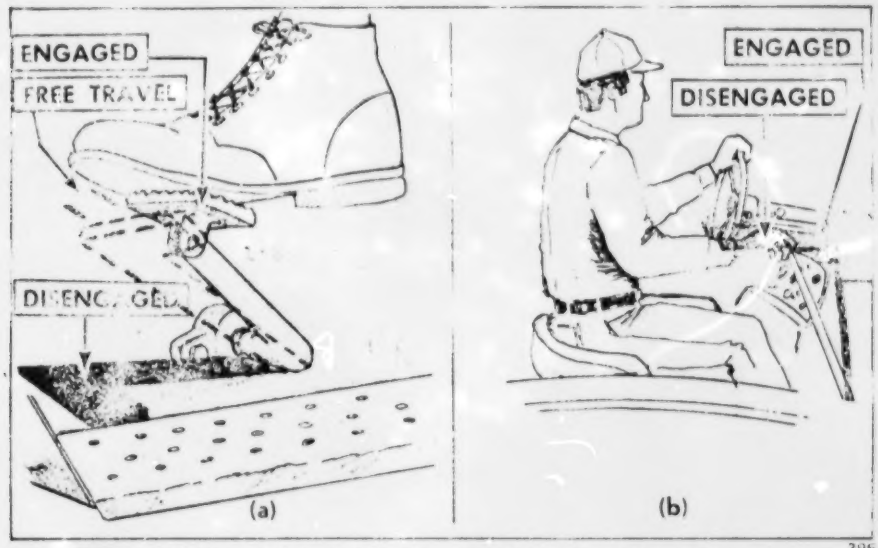
[redacted] Lower links equipped with latches for quick attachment of equipment.

[redacted] Hitch bar used for attaching some implements. (Inset) Quick coupler attachment provided for some tractors.

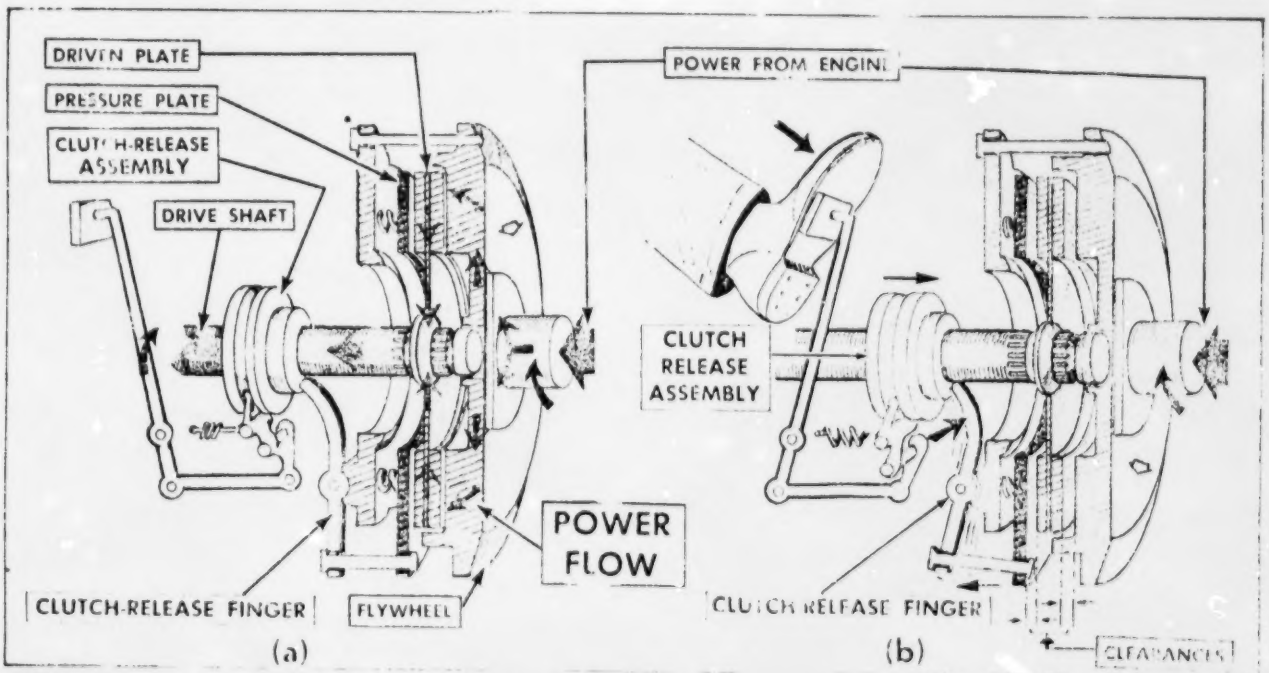


[redacted] Lower link with provision for extending for easy connection to implement.

CLUTCH PEDAL + CLUTCH ASSEMBLY



[redacted]. Clutches work by (a) foot-pedal operation or (b) hand-lever operation. The hand-lever (over-center) type resists movement in either direction until after passing the center position, then it will engage (or disengage) from its own pressure.



[redacted]. Clutch operating principle. (a) Engaged position. Clamping action on driven plate—between flywheel and pressure plate—causes driven plate to rotate with flywheel. Power is transmitted to the drive shaft. (b) Disengaged position. Clamping action is released. No power is transmitted

VESL LESSON PLAN CLASS ESL/Farm Equipment Operation and Maintenance WEEK # 29

1) LESSON TOPICS:

ESL Equipment Operation--Adjustment and Operation of the Rear Blade.

The rear blade or scraper is commonly used to flatten levees, scrape corrals, smooth ground and do minimal leveling.

VOC

2) BEHAVIORAL OBJECTIVES:

ESL Students will be able to pronounce and know usage and meaning of words and instructional phrases used in the operation and adjustment of the rear blade.

VOC Each student will flatten levees with 3-point hydraulic system in the draft control position. Each student will operate rear blade with tail wheel to smooth ground.

3) LESSON OUTLINE: (TEACHING METHODS, STUDENT ACTIVITIES, EVALUATION INSTRUMENTS)

ESL In the field again, the first half of the class period. During this time of the year it is still light enough outside to work outside in the field. During the second half, it get dark, so we return inside the classroom to review any new terms, new concepts, questions, drill pronunciation as needed, use native language (Spanish) when needed to explain the more difficult concepts, instead of in English.

(OBJECTIVES, continued) CLASS ESL/Farm Equipment Operation and Maintenance WEEK # 29

VOC Same

4) NEW VOCABULARY: Draft contol, position control, draft, smooth, level, levees, scrape, rear blade, integral versus drawn-type implements, low and high spots; wet, dry and smooth soil.

5) MATERIALS NEEDED: Scraper or blade, tractor.

6) LESSON EVALUATION: The term "new concept--draft control" versus "position control" was especially difficult to learn by the students, even when it was explained in Spanish. After we explained and demonstrated it with the tractors and the blade and also in the classroom, we had each student explain to the other these terms. We found that we need to go over them some more in future classes.

VESL LESSON PLAN CLASS ESL/Farm Equipment Operation and Maintenance WEEK # 30

1) LESSON TOPICS: Spring-Tooth Harrow

ESL

VOC

2) BEHAVIORAL OBJECTIVES:

ESL The student will be able to verbalize the terms involved with the operation of the spring-tooth harrow and other related implements.

VOC The student will learn the purposes of the spring-tooth harrow and other related equipment and perform in the field.

3) LESSON OUTLINE: (TEACHING METHODS, STUDENT ACTIVITIES, EVALUATION INSTRUMENTS)

ESL Use the 9-page handout on farm equipment and discuss in the classroom the various other farm implements and equipment. These other implements will not be used in this course due to lack of time.

Drill and practice concepts and terms such as:
draft control and position control and their adjustments with tractor equipment.

Drill and practice pronunciation and definitions in the field as appropriate.

VOC The vocational instructor will demonstrate hook up of the spring-tooth harrow, its proper adjustments to use in an open field. Have each student perform hooking up the implement and demonstrate harrowing with the tractor in the field.

Have the remainder of the students observe the other students as they perform in the tractor and critique performance. Also, the instructors will critique and evaluate each student verbally to other students and to correct any deficiencies in performance or safety.

4) NEW VOCABULARY:

5) MATERIALS NEEDED: 9-page handout on farm equipment and implements.

6) LESSON EVALUATION:

Documentation for Handouts

Following are sources of illustrations and pictures used throughout the curriculum guide. Accompanying these are descriptions, phrases and names either designed for this course or adapted from the sources shown below:

Book Numbers and Titles:

#1 American Association for Vocational Instructional Materials (AAVIM), Tractor Maintenance, Principles and Procedures, The Engineering Center; Athens, Georgia; c. 1970.

#2 American Association for Vocational Instructional Materials (AAVIM), Tractor Operation and Daily Care, The Engineering Center; Athens, Georgia; c. 1970.

#3 John Deere and Company, Farm Machine Operation; Moline, Illinois; c. 1974.

#4 John Deere and Company, Fundamentals of Machine Operation; Moline, Illinois; c. 1957.

Covering Page Numbers:

68- 70 ..... #1, Chapter 6.
85- 87 ..... #1, Chapter 5.
88- 96 ..... #3, Part 1, "Tractors".
102-107 ..... #1, Chapter 1.
113-114 ..... #1, Chapter 2.
118-119 ..... #1, Chapter 3.
132 ..... #3, Part 1, "Tractors".
141 ..... #2, Chapter 3.
148-157 ..... #4, Pages: 154, 187, 204, 211, 217, 237, 247, 259,
163-165 ..... #1, Pages: 22, 25, and 31.

* * *

GLOSSARY 1

Tractor Parts, Definitions Purposes & Functions

AIR CLEANER: A device on an engine to filter or clean the air used for combustion.

AUXILIARY HYDRAULIC CONTROL: A lever on the tractor which controls a separate remote cylinder that can be taken off one implement and mounted on another.

BATTERY: A container that stores electrical energy that is used to start an engine.

BATTERY CABLE: The thick wire that connects the battery terminal to the starter, or one that grounds the battery.

BRAKE PEDAL: A lever that is pushed down or released by the foot for slowing or stopping a vehicle.

BREATHER: A filtered opening in the engine to allow or let air inside.

CLUTCH PEDAL: A lever that is pushed down or released by the foot to engage or disengage the transmission from the engine.

DIFFERENTIAL: Gears that connect two axles that turn the wheels. It makes one axle turn faster or slower than the other when turning around a curve.

DRAFT CONTROL LEVER: A weight-transfer device in the tractor hydraulic system. It is used with implements such as plows and disc harrows. When the plow hits hard ground, the plow automatically raises up.

DRAW BAR: A heavy swivel lever attached at the rear of a tractor or other vehicles. It is used for hitching and pulling implements, other vehicles or for towing heavy loads.

ENGINE: A machine for starting motion in some other machine. Any machine that uses energy to develop mechanical power.

FAN: The device that is used to pull air in through the radiator to cool the water or coliant. It has blades or vanes attached to a rotary hub and turned by a motor.

FAN BELT: A rubber flexible ring which is attached tight around the fan pulley to turn the fan.

FENDER: Metal covers over the wheels of a vehicle to protect against splashing mud.

FRONT AXLE: The metal (iron) rod or bar on the front end of a tractor that holds the two front wheels.

FUEL CAP: The cover for the opening of the fuel tank.

FUEL FILTER: The apparatus or device that cleans the fuel that goes from the fuel tank to the combustion chamber.

FUEL GAGE: The indicator on the instrument panel which shows the amount of fuel in the tank.

FUEL INJECTION LINE: The small tube that carries fuel from the fuel tank to the fuel injector pump.

FUEL INJECTION PUMP: The mechanism that forces high pressure to the fuel (1600 to 3200 pounds per square inch) through tubes to each cylinder.

FUEL INJECTOR: The device which sprays fuel into hot compressed air in a diesel engine.

FUEL SHUT-OFF: The turn switch which is used to turn on or turn off the fuel from the fuel tank to the engine.

FUEL VALVE: The switch to turn on or off the fuel to the engine.

GEAR SHIFT LEVER: The bar device to change the gear ratios in the transmission.

GENERATOR: A machine for changing mechanical energy into electrical energy.

GENERATOR PULLEY: The small wheel with a grooved rim that is turned by a belt, which turns the generator.

HITCH PIN: The large rod that is used to hook up or hitch implements to the draw bar.

HYDRAULIC COUPLER (Connector): The connector which hooks up the hydraulic hoses from the tractor to the implements.

HYDRAULIC LIFT CONTROL LEVER: The control which is operated by hand to lower or raise an implement.

LINCH PIN: The small rod which is used to keep the hitch pitch from coming out.

LOWER LINKS: The two lower hitch bars which pull an implement and raise and lower it.

OIL DIP STICK: A thin metal stick that is used to measure the level or amount of oil in the crankcase.

OIL FILTER: The apparatus to clean the oil.

OIL PAN: The container on the bottom part of the engine that holds the oil.

POWER STEERING PUMP: A device or apparatus that forces the hydraulic oil in the power steering system.

POWER TAKE-OFF SHIFT LEVER: The bar device to turn on or off the power to the implements attached to the tractor.

RADIATOR: A water-filled apparatus on a vehicle to cool the water that cools the engine.

RADIATOR CAP: A water-tight cover on a radiator to keep the water and pressure inside.

RADIATOR HOSE: Rubber tubes that carry the water or coolant from the radiator to the engine and from the engine to the radiator.

REAR AXLE: The part of a tractor that connects the differential to the wheels.

RIM: The outer circular part of a wheel on which a tire is mounted.

TACHOMETER: The indicator on the instrument panel which shows how fast the engine is turning. It shows the revolutions per minute (R.P.M.) of the engine.

TEMPERATURE GAGE: The indicator that shows how hot the engine is.

THROTTLE CONTROL: The lever that controls or adjusts the engine speed (R.P.M.).

TIRE: The rubber casing around a wheel (rim) of a vehicle forming the tread.

TOP LINK (UPPER LINK): The bar or lever which is the third connection between the tractor and the implement. This connection enables (lets) you to tilt the implement forward or backward to make it level.

TRANSMISSION: The part of an automobile, truck, or tractor that transfers power (force) from the engine to the wheels.

VALVE STEM: The opening on a tire where air is put in or let out.

WATER PUMP: A device or apparatus that forces the water or coolant in an engine around and circulating the water between the engine and the radiator.

WHEEL WEIGHT: Heavy iron objects attached to the wheels or front part of the tractor for better traction.

GLOSSARY 2

General Farm-Related Definitions

ADJUSTMENT: A change or alteration so as to make something fit or operate correctly. To regulate; such as changing or setting of the breaker points in the distributor to set the timing properly.

ALIGNMENT: The proper lining up of any object. In aligning the front wheels of an automobile, they are set so they do not turn in or out, but are exactly parallel to each other to prevent wear and tear on the tires.

ASSEMBLE/REASSEMBLE: To put together or to take apart, piece by piece, such as to take apart a carburetor to clean, replace parts, then to reassemble it or to put it back together again.

CARBON: A dark non-metallic chemical element which results after combustion takes place. Carbon normally goes out through the exhaust of an internal combustion engine, but it may also build up too much inside the engine if the combustion is not burned with the proper fuel/air mixture.

CIRCUIT: In an electrical system, the complete electrical path which an electrical current may flow from one point around and back to the same point.

CIRCULATION: Moving around from one place to another, as water running through the hoses and engine block of the cooling system.

CLEARANCE: A gap or space between two objects. In mechanics, the spacing in the valves that is set and adjusted with a feeler gage.

CLOG: To stop up a pipe and not let fluid through such as if dirt gets inside a fuel line and doesn't let fuel through to the engine. Dirt clogs up the fuel line or rust clogs up the radiator.

COMBUSTION: The process of burning, using a fuel and oxygen mixture. In an engine there is a combustion when gasoline mixes with air and a spark is ignited.

DAMAGE: When something goes bad and is not useful anymore. When a person does not perform proper preventive maintenance on his farm equipment, harm or injury is caused so that the equipment breaks down, that is, it is damaged.

DANGEROUS: Possibility of causing injury or pain; not safe.

DEFECTIVE: Having something bad, imperfect, or something not working correctly, such as a vehicle having bad or defective brakes.

DETERGENT: A cleaning substance, especially one that foams and cleans like soap. There are also cleaning agents in lubricating oil for engines that do not foam.

DISENGAGE: To release or loosen from something that holds together, such as when the clutch pedal is let out in a tractor, it engages the transmission with the engine, that is, it hooks up the power to the wheels or disengages or releases the power when the clutch pedal is pushed down.

DRAIN: To empty or let out a fluid such as the oil out of the oil pan in a tractor.

ELECTRODE: The small metal piece that extends at the end of a spark plug and which grounds out an electrical current causing a spark.

EMPLOYER, EMPLOYEE: The person, company, or farmer that a worker works for. A person who performs a job who gets paid by an employer is called an employee.

EQUIPMENT: Any machine, implement, or device that is used in doing a job, such as a plow, disc harrow, ridger, etc.

FRICTION: A rubbing or touching together of one object against another. In mechanics, the resistance to motion of two moving objects or surfaces. Oil or grease reduces this friction.

GAP: A small space or opening between two objects, such as the space that is between the two breaker points in a distributor in an engine or in a spark plug.

HIGH VOLTAGE: Large amounts of electrical current. For example: in an engine, the ignition coil could convert the 12 volts from the battery to up to several thousand volts.

IDLE SPEED: The speed at which an engine runs at its slowest R.P.M. without performing any work out of gear.

INCREASE: To add to; to make the amount or number bigger or larger. Decrease if it is smaller.

LEAK: To let water or a fluid out of a container or into a container. Example: If there is a small hole or crack in the tractor radiator, the water will leak out and cause overheating of the engine.

LOBE: The rounded corners of a shaft, such as the cam shaft of an engine. The lobes cause an up and down movement on another part or parts, such as the lobes of a distributor shaft which opens and closes the breaker points.

LUBRICANT: Anything that is used to lower the resistance between two objects, especially two metal parts that are moving or touching each other. Lubricants like oil or grease make it smooth and slippery between two moving parts to prevent overheating and to prevent wear and tear.

LUBRICATE: To make smooth or slippery; to apply a lubricant like grease to the moving parts of machinery and equipment.

MAINTENANCE: To keep in certain condition, especially in efficient and good repair; to preserve, as to keep a tractor in proper working order to prevent break downs.

MILES PER HOUR: The speed or rate of movement of a vehicle. If you're traveling 50 miles per hour (M.P.H.), you will travel 50 miles in one hour.

OPERATOR'S MANUAL: The booklet that comes with new implements, tractors, or other equipment which explains how to operate, perform preventive maintenance, and has other information about the machine.

OVERLOAD: Having more than enough weight, too much weight, like putting too many sacks of grain on a truck causing the springs to break.

PARTICLES: Small pieces of objects. In an engine, small pieces of metal particles will cause damage to the inside of an engine.

PITTED: Small holes, marks, or gouges on a flat surface. Example: Improper timing can cause the breaker points to become pitted; this will prevent the points from making good contact.

POISON: A substance causing illness or death when eaten, absorbed through the skin, or when you drink it.

ROTATION: The turning or spinning motion of an object such as the crankshaft in an engine.

RUST: The reddish-brown corrosion on metal that is caused by oxidization, which is normally the contact of a metal with oxygen and water.

SAFETY: Anything that has to do with being careful while working so as not to get hurt or injured.

SETTLES DOWN: The act of objects going to the bottom inside of a container, such as the dirt in the oil inside an engine which goes to the bottom, or dirt "settles down" to the bottom inside the oil pan.

SLUDGE: The dirt, grime, water, and corrosion in the oil of an engine which causes wear and tear on an engine. The oil needs to be changed when there is sludge in it.

SMOOTH: To make level or without any marks or without any holes, dents, or warps. Also, to make slippery like oil makes the metal parts run smoothly in an engine or other fast moving parts to prevent overheating or wear and tear.

SUCTION: The opposite of blowing or forcing air or a fluid through a container. The process of sucking air producing a vacuum or a partial vacuum in a container. In an engine, a suction or vacuum is created to force the fuel into the cylinder. Also, the fan sucks air in through the radiator.

TERMINAL: The part that is connected with another part; either end of an electrical circuit or a connection at either end. Example: On a battery, the posts on top of the battery that are connected to the cables are also called terminals.

TILT: Moving an object at an angle such as adjusting the plow or ridger at an angle to perform its best job.

TOP DEAD CENTER: In mechanics, when the timing in an engine is set so that the number one piston is at the exact top of the up and down movement.

TOXICITY: The state of having poison or being poisonous. Example: Poisons used on the farm as insecticide have low, moderate, or high toxicity.

VISCOSITY: The resistance or thickness of a fluid, such as the thickness or heaviness of oil in an engine--the oil viscosity.

WARP: A twist or a bend in an object caused by expansion or contraction. Example: In an engine, when it gets too hot due to a bad cooling system, the engine head and other parts become twisted, crooked, or warped.

WATER BOILING POINT: The temperature at which water will boil. Although this temperature is normally 100 degrees Centigrade and 212 degrees Farhrenheit, this temperature at which water boils can be increased by increading the air pressure, such as what happens in an engine radiator. This causes the water or coolant in the radiator to boil at a higher temperature and thus the engine does not heat up and boil over as easily.

WORN OUT: When an object has been used to the point where it needs to be replaced. Example: When the tires are "worn out", they should be replaced.

FLASH CARDS

The following words and phrases are suggested below for use with flash cards. The cards are handy for students to study by, either with the teacher or when drilling other students. Samples are shown on pages 179-180.

acids, rust
adjustment
air-fuel mixture
alignment
April
assemble/reassemble
August
battery terminal, post
burned valves
carbon
carburetion too lean, too rich
caution, low toxicity
check for oil leaks
check oil level on dip stick
chemical
circuit
clogged, leaky radiator
combustion
condition
cooling system
corrosion
crankcase ventilation
cut-plant
cylinder
damage, ruin
December
defective
detergent
don't get stuck in the mud
Do not ride the clutch
draft control
drain the crankcase
drive forward, back up
dust and dangerous fumes
efficiency
electrical
electrical, mechanical energy, power
electrode
employee/employer
engage/disengage
engine vibration
excessive wear
farm equipment
farm implement
February
final drive
firing order
fix the flat tire
forced circulation
4-stroke engine
friction
fuel injector
furrow, row
gear reduction
goggles, face shield, rubber gloves & boots
ground connection
harvest
heat expansion, contraction
heavy duty oil
high compression
high pressure
high spots, low spots on ground
high voltage
hook up the plow/disc/P.T.O.
hydraulic
idle speed
ignition knock
mineral deposits
minimum wage
increase
injector nozzle
integral-type, drawn-type
January
July
June
large container, drum, barrel
lobe
lock/unlock
lubricant
lubricate
maintain/maintenance
March
May
metal particles
miles per hour (M.P.H.)
motion
motor/rotor
neutral/neutralize
noisy valves
November
October
oil/metal deposits
oil viscosity
operate/operation
operator's manual
orchard/vineyard
overheat
overload
pay a penalty/pay a fine
pedal/lever
perform/performance
pitted
plow, disc, blade, ridger, cultivator
plow in a straight line
poison--danger, high toxicity
prevent/prevention
proper/improper
proper procedure
prune
pull, tow, drag, draw
put into position
regular pay/time and a half pay/double time pay
replace
rotation/revolution
safe driving/safe operation
safety
scraper blade--to level/to smooth
September
settles down
sludge
smooth
social security (F.I.C.A.)
spark plug gap
stabilizer bar--prevents swinging
starter, solenoid
state disability insurance (S.D.I.)
storage shed, barn, tank
suction
surface--wet, dry, hard, soft
suspension
terminal

FLASH CARDS
(Continued)

The ground is hard and dry. You need to water it.
The ground is soft, wet, and muddy. Don't get stuck.
The plow is set too deep, too shallow.
thin
thin-hoe
tilt the blade, plow, raise & lower
timing
top dead center (tdc)
valve adjustment
valve clearance
valves are too tight, too loose
warning--moderate toxicity
warp
waste of power
watch for high tension wires
watch for low limbs.
watch the tree props
water boiling point
water boils at 212° F.
weight distribution
workers compensation insurance
Work Permit for under 18 years
worn out

plow in a straight line

212

fix the flat tire

213

POISON
DANGER
High Toxicity

minimum
wage

214

215

Certificate Of Recognition

Presented to

_____

for participating in the introductory Vocational English-As-A-Second-Language course of

_____

Awarded by Ceres Unified School District on _____

Principal, Adult Education	*Voc-English Teacher*	*Vocational Teacher*

Certificate Of Completion

Awarded to

_____

for completing a Vocational English-As-A-Second-Language course in Farm Equipment Operation & Maintenance and demonstrating entry-level skills in:

_____ Diesel & Gasoline Tractors

_____ Disc _____ Plow _____ Ridger

_____ Mechanic Tool Identification and use

_____ Farm Safety

_____ Related English

_____ Springtooth Harrow

Awarded by Ceres Unified School District on _____

_____	_____	_____
Principal, Adult Education	Voc-English Teacher	Vocational Teacher

JOB DEVELOPMENT PLAN

The following general information about the program will help show how and when on-the-job training will fit into the over-all objectives. The purpose of the program will be to increase the English and vocational skills of limited- and non-English-speaking adults for raising their level of skills, specific to the agricultural industry. This will be accomplished in two components, classroom training and on-the-job training (OJT).

Students will first be given exposure and basic English/vocational skills during classroom training. The ESL lessons will teach the students to say very occupational--specific statements, such as: "I changed the oil in the tractor" or "The letter to Mr. Smith is on your desk". Concepts will also be taught in ESL, while the vocational lessons will cover process/procedure with machines and equipment used in a labatory setting. These vocational lessons will incorporate the vocabulary taught by the ESL teacher.

As students' skills develop, the job developer will further their training opportunities by placing the students into OJT. Here, the trainees will learn by actual job performance, complemented by continued classroom training. Based upon the success of on-the-job training, OJT employers will be given the option of later hiring the trainees on a permanent, unsubsidized basis. Otherwise, trainees will be placed into other permanent jobs or training opportunities, appropriate to their interests and needs. The OJT plan is presented here, complete with steps and supplementary materials.

JOB DEVELOPMENT PLAN

(Duties of Job Developer and Staff)

If during the performance of this job development plan the work load becomes too heavy, adjustments will be made if possible, without sacrificing the quality of work. To keep alert of a potential overload, progress reports will be made regularly at monthly staff meeting and as needed. Also during these meetings will be discussed discrimination of trainees/students regarding age, sex, race, religion or marital status in OJT. Our program will discourage such discrimination.

STEPS:

I. Become familiar with students' skills, interests, availability, etc., by writing profiles or case studies of each. Do this by observing them in class and by talking with them, regularly.

II. Determine how, when and where to learn of prospective employers, (such as agriculturally-based associations and bussinesses):

A. Growers Harvesting Committee.
B. Peach Growers Association.
C. Employment Development Department (EDD)
D. Comprehensive Employment Training Act (CETA)
E. Dairymen's Association
F. Telephone Book (Classifications of Yellow Pages):

1. Ag Chemicals
2. Ag Sprays/Crop Dusting
3. Ag Consultants
4. Farm Equipment Dealers
5. Farm Equipment Repairs
6. Dairy Equipment/Supplies
7. Harvesting Contractors
8. Hatchery/Poultry
9. Home Growers Associations
10. Vegetable Shippers
11. Warehouse
12. Wine Industry/Wineries/Vineyards

III. Call and visit employers to learn of on-the-job-training (OJT) leads and of their labor needs.

IV. Compare students' skills with labor needs of employers. In the process, help students fill out "Trainee Job Profile Cards". Then, roughly determine students' CETA eligibility for estimating to what extent CETA should be emphasized with prospective employers. (If only a few students qualify for CETA, the job developer should focus on non-CETA OJT contracts.) Arrange for students to complete CETA forms and to have individual interviews with CETA.

Identify those students seeking OJT but not qualified for or interested in CETA. Plan to develop OJT opportunities for these students directly between our program and the employer, with the employer paying wages.

V. Determine strategies for securing OJT leads from the employers identified:

A. Identify advantages for the OJT Employer:

1. Can screen trainee before commiting self to OJT.
2. Can instruct trainees of employer's particular way of operating equipment, etc.
3. Can benefit by trainee's labor without paying wages (providing trainee wants to volunteer).
4. Can have trainee on flexible schedule, if necessary.
5. May not incur insurance costs (if under CETA or if trainee volunteers).
6. Can have bilingual/bicultural trainee for interpreting.
7. Would be assisted in counseling and monitoring trainee by program staff.
8. Would not have to train from scratch; trainee would already possess basic vocational and related ESL skills.
9. Can have first choice at hiring trainee permanently after OJT objectives are met.

B. Design and send out a brightly-colored brochure to all prospective employers. Design brochure to describe classroom- and on-the-job training, and also to list advantages the employer would have. Provide a stamped, addressed 3" X 5" card for those interested to detach and return. (Be sure to check with the post office concerning weight and postage specifications.)

C. Follow-up by immediately telephoning employers responding to brochures. Within one to two weeks, contact those not responding. Schedule appointments to develop leads.

D. Develop OJT sites:

1. Meet with prospective OJT employers to further explain the program and its linkage with CETA, as an alternative OJT plan. Secure job openings and learn of employer's OJT preferences for CETA* or otherwise.

2. Match student with OJT position, based upon skills; interests; and job duties, hours and location. On "Trainee Job Profile Card" or similar form, have student record hours available for the coming week, by updating the card. This will help the job developer plan OJT placement around the student's other commitments.

*Of major importance in the contract are the options ofpaying the trainee: 50-50 with CETA paying half, 100% paid by employer without CETA, or no wages paid by employer (trainee volunteers time).

3. Arrange opportunity for OJT employer and trainee to meet. If employer and student are in agreement with developing an OJT opportunity, agree on terms of contract* and the responsibilities of each person.

4. For students needing/wanting other types of services than on-the-job training, refer them to appropriate agencies within their communities. Make sure their needs are met.

E. Visit/monitor job sites and training:

1. For non-CETA OJT trainees, talk with trainee and employer separately and together to resolve problems and to identify potential problems. Have them complete evaluation forms for documentation.

2. For CETA OJT trainees, maintain contact with CETA's monitor/job developer.

3. Our job developer will communicate to our teachers any skill deficiencies for trainees to overcome during evening classes.

F. Monitor off-site:

1. During breaktime of the evening classes, the trainee, job developer, and staff can discuss the trainee's OJT more casually. The trainee may need this extra "counseling", and, as a result, may reveal other job-related problems.

2. If OJT is incomplete by end of program, CETA-monitored OJT trainees will be CETA's responsibilitiy. Non-CETA trainees will be the program's responsibility and will be enrolled into other suitable programs (i.e., similar community agencies, etc.) providing desirable training is complementary to the training just completed.

*See page 2 - bottom.

Schedule For Employer Contacts*

Scheduled Contact ____ AM / PM ____ / ____
Time Date Today's Date

Contact with ____ / ____
Name Company

Street Address

Mailing Address

City Zip Telephone No.

Contact by
Program rep. / Title

Results:
Job Opening (Title)

No Job Opening Secured/Reason

Action to Take

Additional Comments

Scheduled Contact ____ AM / PM ____ / ____
Time Date Today's Date

Contact with ____ / ____
Name Company

Street Address

Mailing Address

City Zip Telephone No.

Contact by
Program rep. / Title

Results:
Job Opening (Title)

No Job Opening Secured/Reason

Action to Take

Additional Comments

Scheduled Contact ____ AM / PM ____ / ____
Time Date Today's Date

Contact with ____ / ____
Name / Company

Street Address

Mailing Address

City Zip Telephone No.

Contact by
Program Rep. / Title

Results:
Job Opening (Title)

No Job Opening / Reason

Additional Comments

Scheduled Contact ____ AM / PM ____ / ____
Time Date Today's Date

Contact with ____ / ____
Name / Company

Street Address

Mailing Address

City Zip Telephone No.

Contact by
Program Rep. / Title

Results:
Job Opening (Title)

No Job Opening / Reason

Additional Comments

* See detailed description of particular job.

JOB ORDER

Date_____ Person Taking Order_____

Employer_____ Contact Person_____

Company_____ Supervisor_____

Address_____

Telephone No.( )_____

Job Site_____

Job Title_____ Pay $_____ Per____

Hours + Days_____ Ttl. Hrs/Week_____

Qualifications/Requirements:_____

_____

_____

Job Description (List major duties first.)_____

_____

Skills Employer/Other Will Train in_____

_____

Comments:_____

_____

Probably CETA or Non-CETA?

(over
Referrals)

Job
Referrals Made:

Date	Student's Name	Results

1. _____ _____ _____

Comment: _____ Initials: _____

2. _____ _____ _____

Comment: _____ Initials: _____

3. _____ _____ _____

Comment: _____ Initials: _____

4. _____ _____ _____

Comment: _____ Initials: _____

5. _____ _____ _____

Comment: _____ Initials: _____

Re-assessment of Job Opening _____

_____

_____ Initials: _____

Adjustments Made/Date _____

_____ Initials: _____

6. _____ _____ _____

Comment: _____ Initials: _____

7. _____ _____ _____

Comment: _____ Initials: _____

(Over for Job Order)

(FOR STUDENT'S FILE)

OJT Referral

DISPOSITION FORM

TRAINEE: _____

DATE REFERRED: _____

EMPLOYERS BUSINESS: _____

_____
(Street Address)

_____
(City) (Zip) (Telephone)

CONTACT PERSON: _____

DISPOSITION OF INTERVIEW

JOB OFFERED:

DATE: _____

____HIRED

____OFFERED BUT DID NOT ACCEPT

____NOT OFFERED JOB

PROGRAM COMMENTS:

(FOR STUDENT'S FILE)

OJT Referral

DISPOSITION FORM

TRAINEE: _____

DATE REFERRED: _____

EMPLOYERS BUSINESS: _____

_____
(Street Address)

_____
(City) (Zip) (Telephone)

CONTACT PERSON: _____

DISPOSITION OF INTERVIEW

JOB OFFERED:

DATE: _____

___HIRED

___OFFERED BUT DID NOT ACCEPT

___NOT OFFERED JOB

PROGRAM COMMENTS:

ON-THE-JOB-TRAINING (OJT)

AGREEMENT

1. Job Title: _____

2. Name and Address of Employer: _____

_____ 3. Training Location: _____

4. No. of Participants: _____ 5. Hours of Training: _____

6. Length (time) of Project: _____ 7. Starting Date of Project: _____

8. Purpose and Objectives of Project:

☐ To develop new skills ☐ To upgrade basic knowledge

☐ To teach job related skills training through formal instruction

9. Major areas of training and employment objectives:

A. Prepare for work as a _____

B. Job skills that will be taught:

10. Activities and Conditions of Training: (Include supervisor's plan for training, special equipment to be used, and list any supplemental training).

11. Standards for the project.

A. Participant will have close supervision and training from _____

B. Necessary materials, space and equipment will be provided by the sponsor:

☐ Yes ☐ No If no explain:

C. Sanitary and safety conditions at training site will conform to state and local codes.

☐ Yes ☐ No If no explain:

D. Type of safety instruction to be provided: (Complete only if applicable)

12. Compensation to Trainees:

(ADDENDUM)

OJT
COMMITMENTS

As on-the-job-trainee, I accept the responsibilities to:

1) Conform to rules and regulations of O.J.T station.
2) Give my employer and Job Developer advance notice when I am not able to report to work.
3) Tell my Job Developer as soon as I know;
   a) that I am dissatisfied with O.J.T. station;
   b) that I intend to quit; or
   c) that I have been fired or laid off.
4) Inform Employer that I intend to quit at least 2 weeks before intended last day.

As Employer, in this on-the-job-training agreement, I agree to:

1) Notify Job Developer as to progress of trainee;
   a) that I am satisfied;
   b) that I am dissatisfied with trainee; or
   c) that I intend to fire or lay-off trainee.
2) Help trainee in developing skills appropriate to the particular O.J.T. station.
   a) O.J.T. station must complement the skills learned in classroom situation.
3) Instruct, train and orient the trainee during the time he/she is assigned to my place, in the following areas:

1)_____ 4)_____

2)_____ 5)_____

3)_____ 6)_____

Hours at this Training Station

Monday Tuesday Wednesday Thursday Friday Saturday

TOTAL Hours per week_____

Compensation to trainee $_____p/hr

CETA Paid_____ CETA Non-Paid_____

_____ _____ / _____ / _____

Date Employee / Employer / Job Developer

by OJT Training Supervisor

TRAINEE EVALUATION

Trainee:_____ Title:_____

OJT Site:_____

How was trainee's:	Tops	V.Good	OK	Help
a) Attitude toward tasks, supervisor, and co-workers?				
b) Ability to follow written and verbal instructions?				
c) Ability to represent your company? . . .				
d) Ability to accept constructive criticism?				
e) Observance of company rules and regulations?				
f) Performance progress?				

Trainee was/was not absent_____days. Was advance notice given? Yes___No___

Comments:_____

_____

Conference Requested_____ Signature_____ Date_____

by OJT Trainee

OJT EVALUATION

Trainee:_____ OJT Title:_____

OJT Site:_____

Number of Hours Worked:

What do you feel you learned on your job this week?_____

_____

Did you get enough training from your training supervisor? (If not, explain.)_____

_____

Signature_____ Date_____

---

by OJT Program Monitor

Trainee Evaluation
OJT EVALUATION

Trainee:_____ OJT Title:_____ OJT Site:_____

Are OJT objectives being met? (If not, explain.)_____

_____

Trainee's Performance (Good, bad; explanation):_____

_____

Job Site and Trainer:_____

Additional Comments:_____

Monitor:_____ Title:_____ Date:_____

Final

OJT EVALUATION

(by OJT Trainee) (After Completing OJT)

Name _____ Class _____

Average Hours worked per week _____

Employer _____ Supervisor _____

Job duties _____

_____

_____

Please explain the on-the-job training you received from your employer to help you handle your job.

_____

_____

_____

In what ways was this training most helpful? _____

_____

Least helpful? _____

_____

Did your training supervisor discuss your job with you after the on-the-job visits?

Yes _____ No _____

How were on-the-job visits most helpful to you?

_____

_____

Least helpful? _____

_____

Please make any suggestions to improve on-the-job supervision.

_____

_____

(Complements of Ceres Work Experience Program)
Revised

Permanent Job Placement Plan

The ultimate goal of the vocational/ESL program is to place the trainees into permanent unsubsidized employment. After acquiring basic skills, daily performance in regular employment will reinforce skills learned. The procedure used for placing trainees into permanent positions will follow the same steps as in the OJT plan, but geared toward permanent, rather than temporary work. (The forms will be the same, omitting "OJT".)

1. Nearing the completion of meeting OJT objectives, (as determined by staff, employer and trainee) develop job leads. Follow OJT Steps I - VD2. Change strategy for employers hiring permanent help.

   Of importance is an awareness of the employers' and trainees' needs, interests and what they have to offer. Also, the employer, will be explained about how the VESL program will have helped the trainees and how it can help them.

2. Schedule interviews for trainee, and follow up immediatly to learn of disposition. OJT employers will have priority over other employers, providing the trainees are interested in working permanently for the OJT employers.

3. Maintain open communication with the employers and employees for the first few weeks to prevent or resolve problems. This may apply to over-expectations of employees of em-Ployers..

* VESL: Vocational English-As-A-Second Language

JOB DEVELOPMENT REPORT

The successes and problems of on-the-job training hinged upon various factors, the major ones being:

1) the presentation of our program to agricultural businesses and community agencies;

2) the job market (very tight at this point in our program);

3) the availability, interests and preparation of our trainees for employment.

Program Presentation:

The brochure included within this curriculum guide was mailed to prospective OJT employers at no cost to them for returning it. A small percentage was returned. Those employers not responding were contacted, but the general response indicated the employers' lack of trainee-type jobs and their concern about the union.

Tight Job Market:

The tight job market caused the less-skilled unemployed to have less chance at securing meaningful work due to greater competition. This was especially a problem for trainees not qualifying for CETA-funded programs. Even if trainees were CETA-eligible, the high unemployment rate caused the waiting lists for CETA programs to swell, deterring service to our trainees.

As an alternative to CETA on-the-job or classroom training in advanced-level vocational classes, the job developer referred some students to junior college where tuition was no problem.

Trainee Availability, Interests and Preparation:

In some cases, trainees were already employed when the job development plan was first initiated. Some trainees were employed at low-level jobs upon enrollment and then: 1) continued in same jobs, 2) were promoted, or 3) became unemployed once seasonal jobs ended. Other trainees were referred by staff to agencies and became employed or entered additional training programs. (Their growing bilingual and vocational abilities were considerable factors here.)

Job Development Report
Continued

Public Relations/Commencement Dinner:

One of the final attempts of developing OJT and other opportunities for meeting the trainees' needs was a dinner. Trainees, staff and families shared their evening of training accomplishments and delicious ethnic foods. The guests (representatives of agricultural organizations and manpower agencies) shared opportunities/services with the trainees, when descriptions were given of their programs in English and Spanish.

Certificates of Completion/Recognition were presented to deserving trainees, followed by slides showing classes in session. The trainees expressed gratitude and pride in their successes. As a result, this occasion reaped great satisfaction for most if not all of the seventy people attending.

* * *